Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves
PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY, MONADNOCK BLOCK, CHICAGO

VOLUME 63, NUMBER 26
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CHICAGO, DECEMBER 28, 1912

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To Give Long Distance Connections With All Independent Telephone Companies and Their Subscribers Throughout the Middle West

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A RULE OF LIFE.

I always have borne in mind my father's advice—stick everlastingly at it; use initiative, never break faith, and above all, do nothing that could possibly reflect the least discredit upon the good name of the family.—Simon Guggenheim.

A Constructive Letter.

To approach the new year with a feeling of hope and courage and a determination to do one's part to make the world a better place to live in is certainly the right attitude to bear toward the future. It needs no great seer to discern what a happy planet this earth would be if every man sincerely tried to promote a general sentiment of optimism, good will and cheer—not only during the holidays but the whole year round. There wouldn't be so much unrest among "those that want," or so much hard selfishness among "those that have."

There wouldn't be so much strife and bitterness between classes, for such a feeling would draw all together in a common desire to help—and everybody needs help of some kind. In short, such an attitude would nearly bring the millenium, and anybody who works toward that end is to be commended.

These thoughts are naturally inspired by reading a letter that Theodore Gary, under date of December 19, has sent to his associates in the telephone business. The letter speaks for itself and is as follows:

"In the writer's opinion, it is time that all men do what they can to conciliate rather than destroy confidence in our government and institutions.

It is safe to say positively that at no period of this country, or in the history of any other nation, was there so nearly exact justice and equality to all before the law, as exists today in this country. That is to say, the law breaker with money or the violator without property, even if he be charged with anarchy, white slavery or any other heinous crime, gets a fair and impartial trial. It is time for every law-abiding citizen to help spread a better feeling; and especially should this be done by officials of corporations as their companies' contribution to citizenship.

The writer voted for Mr. Taft and adheres to the idea of a protective tariff, yet firmly believes that the country is safe in the hands of Mr. Wilson, and that necessary evolution of methods and practices is progressing in the interest of the people as a whole.

If you agree with this sentiment, please see to it that each of the men in your department is made familiar with the slogan, 'Let us hold up the hands of the national, state, county and municipal administrations,' and add that it is your belief that all should contribute their part towards creating a better feeling. Yours very truly.

THEODORE GARY."

We venture the prediction that the adoption of the idea expressed in this letter would be as "bread cast upon the waters." It is always good business to boost the whole game as well as your own particular part of it.

A Word as to Service Association Aims.

From the first meeting, at which the Central States Service Association was conceived, until the present, the assertion has been repeatedly made that the new organization proposes to hold itself entirely separate and distinct from any of the Independent telephone associations in the field; that it hopes to secure the co-operation of these other associations and to co-operate with them, whether district, state or national; but that there is not the slightest inclination or desire on the part of the members of the Service body to supplant any other association.

In spite of this plain and unequivocal declaration, so often repeated, the idea shows its head every little while, sometimes in the form of a hopeful suggestion, from one unfamiliar with the motive of the new association, again apprehensively expressed as an unpleasant and undesirable possibility.

For this reason TELEPHONY has been asked to again make the matter plain. The Service association has come into

being for the purpose of bettering toll service in the central states and for the promotion of uniform methods of operation by companies interchanging business. It does not propose to deal with legislative problems, with rates, finances or the relations between Independent and Bell companies. Its sole reason for being is the betterment of service. Beyond that it has neither aims nor ambitions, either for the present or for the future.

This fact once established, it clearly follows that the orbit of the Service association does not impinge a fraction of an inch on the orbit of any other existing telephone association, except as it may aid and increase the efficiency of the latter when permitted to co-operate with it. That this is generally recognized as the case is shown by the alacrity with which the directors of the National association welcomed the new organization. They did more. They gladly accepted the suggestion of co-operation advanced by the Service representatives and authorized the working out of a plan by which the new body is to be given a leading part in the technical sessions of the national convention.

If the relations between the Service and the other associations of Independent telephone men are once thoroughly and rightly understood, TELEPHONY believes there will be an end, both of ill-advised advice that the new body supersede existing associations, and of fear that such advice may be seriously considered by the Service people.

Extend a welcome to the new member of the industrial family. If it has not yet got in touch with you, get in touch with it. Familiarize yourself with what it hopes to accomplish—and will accomplish if properly supported—then support it.

New Year's Resolutions are in Order.

Once a year business houses take an inventory of all stock on hand. When the value of the inventory is computed and other deductions made, the firm is in position to know what have been the results of the year's operation. Some firms depend entirely upon this yearly inventory to give detailed information regarding the various branches of their particular product. The results of the inventory are carefully gone over and it is determined whether there has been a profit in the manufacturing or handling of certain products. As a result of the study of the inventory certain products may be eliminated from the list or others added and plans are made for the development of the business along other lines. These plans are somewhat in the nature of New Year's resolutions.

The yearly inventory may be applied with profit by every individual personally. A study of the results produced by a man will show him whether he has made any progress in his work and if he carefully analyzes what his accomplishments have been during the year, he can detect those places in which his work may be bettered and his utility, as well as his earning capacity increased. The really good New Year's resolutions should be based upon a careful study of the failures of the year, as well as the successes.

Much work is put off which should be attended to immediately. Delays occur in answering letters, various reasons being given to oneself for doing so. Possibly the service of the company is not up to the subscriber's idea of standard. The manager should ascertain what that idea is and work toward that end. There are many ways in which the hundred and one parts of the telephone exchange may be made more efficient and economies introduced which will increase the value of the service. Now is the time to make good resolutions, and they should not only be made but kept.

The Canvasser and His Work.

The canvasser or salesman of telephone service has many obstacles to overcome before the signing up of a contract. He may have many prospects, but only the signed contracts are counted in his favor. In the words of the baseball man, "only the runs count. A game may have been well played, but many men who reached first base did not score. Efforts which should have ended in runs are recorded in the 'left on bases' column."

The troubles of a canvasser begin when he approaches a prospect to whom telephone service has never appealed. He is confronted with questions of how best to exploit the service; to answer with confidence questions which the prospect brings up; to convert doubters of the value of the service; to brush away prejudices and ideas of expense, etc.

One of the most common and probably the most important objection that is brought up, is the cost or expense of a telephone. An additional expense of $3 per month for occasional local service is, in the average family, a considerable item. To score a run on such a prospect requires considerable talking on the part of the canvasser. For some the ordinary arguments, such as quick connection with the doctor in case of sickness, value of rapidity with which fire headquarters may be reached in case of fire, marketing in stormy weather, and various other uses and cases of emergency which may arise, are usually sufficient to convince the prospect that the telephone is a good investment. Canvassers should take care, however, that persuasive powers do not influence persons who may discard the service soon after signing the contract.

The Panama Canal Telephone System.

Well to the fore at the moment in the range of the world's eye is the Panama Canal. As the gigantic ditch nears completion details regarding its construction, dealing in arrays of figures which numb the mind and paralyze the ordinary imagination, fill columns of space in the daily newspapers and the popular magazines.

But not until now has the part which the telephone has played in the construction of the link which unites two oceans been accorded its proper place in the written records. W. F. Henkel, assistant district traffic chief, at Albany, N. Y., of the New York Telephone Co., and formerly inspector of traffic for the telephone and telegraph department, in the canal zone, has done the work—and it is work well done. His article appears on other pages in this issue and will well repay reading.

The Telephone's Part in the Building of the Panama Canal

A Description of the Government Telephone System Which Extends Across the Isthmus—Operation and Maintenance—Some Difficulties o Construction—Uses of the System—Other Telephone Companies—Republished Through the Courtesy of the Telephone Review

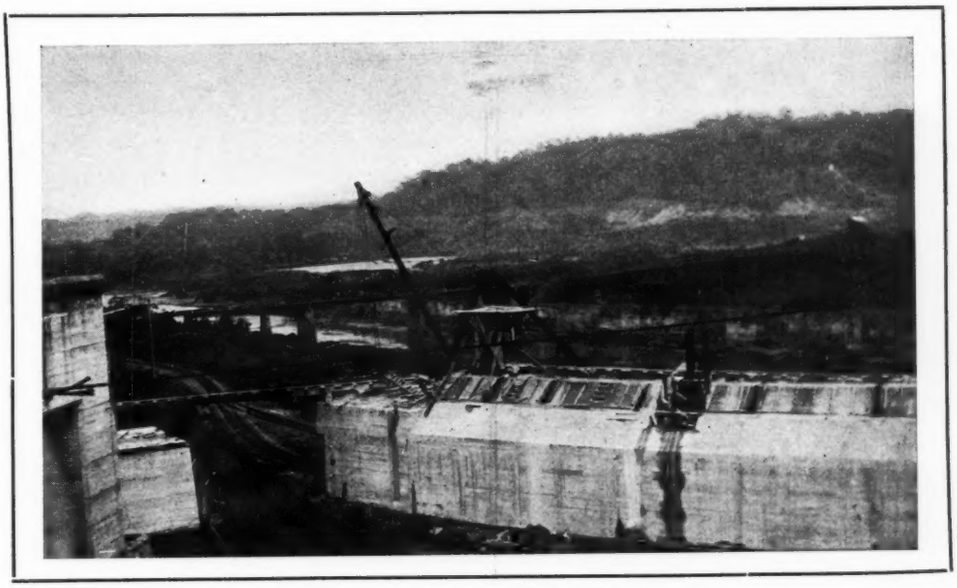
By W. F. Henkel

All eyes are turned to the Isthmus of Panama where the most important engineering feat of the century is fast nearing a successful completion. The city of San Francisco has already been selected and plans have been made for an appropriate celebration of the opening of this great national waterway.

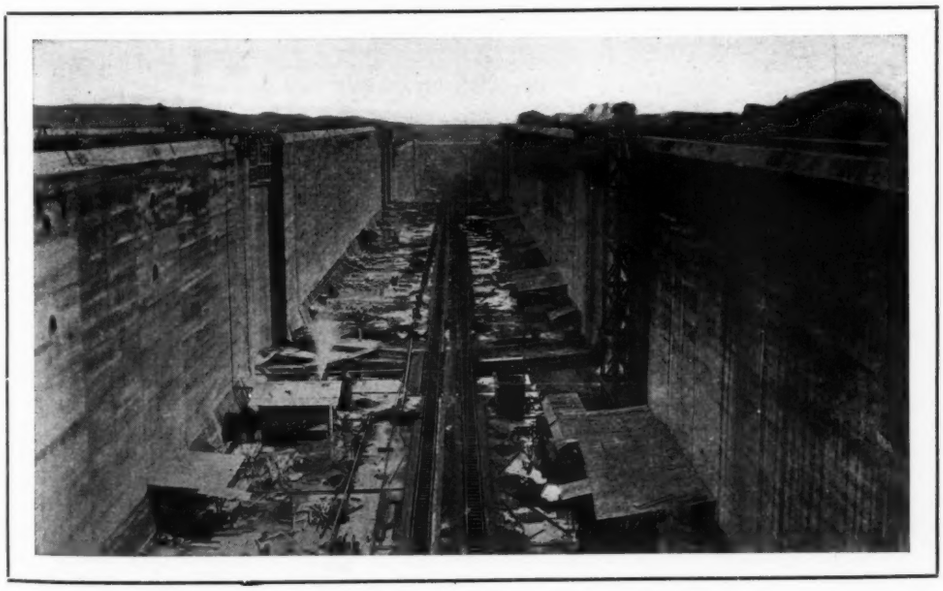
The newspapers and nearly every periodical and magazine contain articles which are of interest to every one concerning this wonderful canal, and the remarkable engineering skill employed in breaking the backbone of the Isthmus. The mountain range is part of the great Rocky Mountain system of North America and similar ranges in South America.

The telephone, as we know, is everywhere and this recently purchased section of the United States, although located in Central America, is no exception.

The Panama Railroad Co. operates and maintains all the telephone and telegraph facilities for the United States government in connection with the direct engineering work and the subsidiary departments upon the Isthmus.



The Spillway at Gatun Dam.



The Middle Lock, Looking North, at Gatun.

Telephone service is used in nearly every branch of work. When the Panama Railroad Co.'s boats arrive in port, ten minutes after they dock a telephone will be found on the boat connected with the Colon Exchange, by which connections can be had with any point along the Isthmus. Another valuable feature is the use of the telephone in obtaining advance information regarding the arrival of boats and special trains. All you have to do is to call your local operator and she will tell you that the boat is 100 miles at sea and in communication by wireless, or that the boat is coming into the harbor and will dock in half an hour, or that a special train will leave at such-and-such an hour, etc.

Telephone-Telegraph Equipment.

The telephone and telegraph department is in charge of C. L. Bleakley, superintendent, a pioneer telephone man, who constructed the first trunk line across the Isthmus in 1905, which I believe consisted of two pairs of No. 9 iron wire, one to meet the requirements of the telegraph communication and the other the telephone. At this time these were considered adequate facilities for a long time to come. At the present time there are about 2,000 miles of copper wire and some 2,000 telephones in use. Some idea can be had of the amount of wire in use by the following comparison. If the wire were connected into one single circuit, it would reach from

Panama to New York City, approximately 2,000 miles.

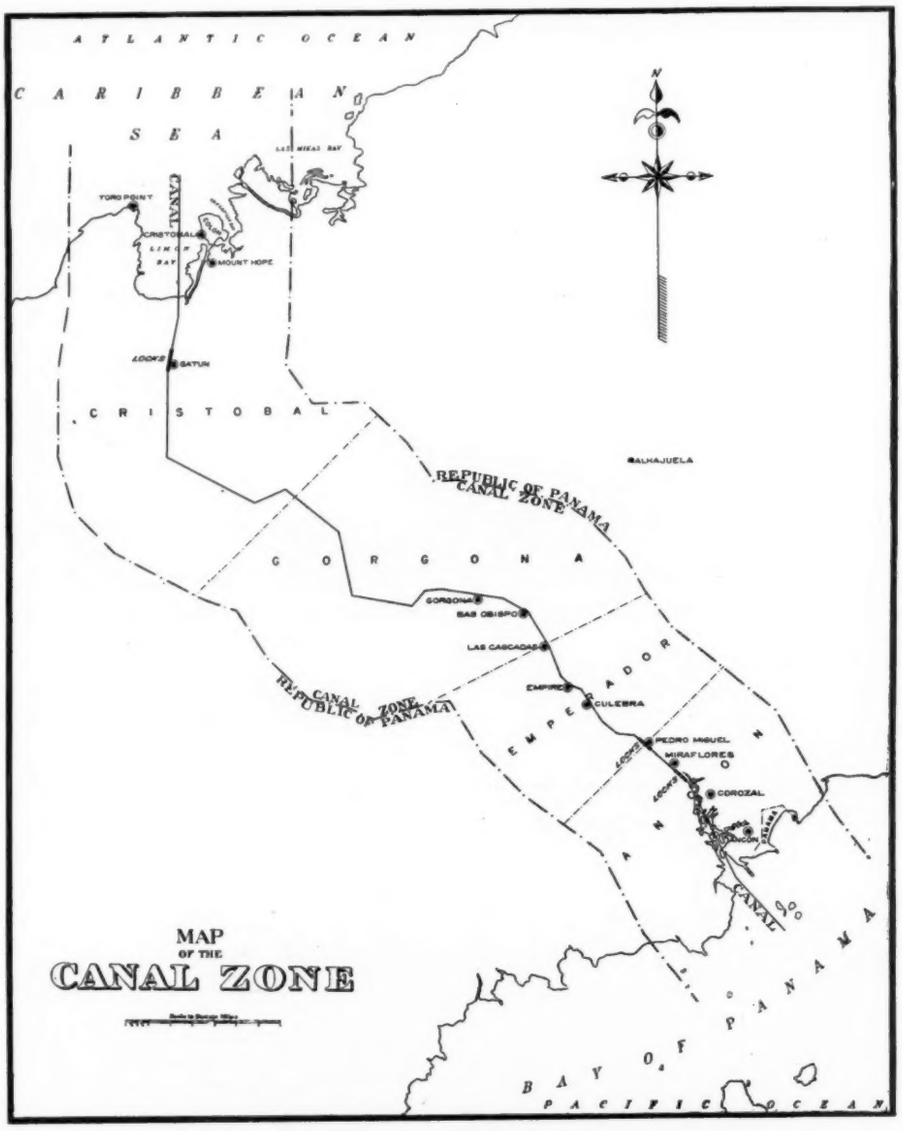
Handling the Traffic.

The telephone traffic is handled at six common battery exchanges, located along the line of the canal, and the maximum traffic load is about 20,000 calls per day. Ringdown circuits are used between exchanges, the subscribers passing their own calls to the distant office.

Aside from the amount of traffic originating in the offices of the several subsidiary departments, there is maintained a separate trunk line of magneto circuits, controlled by a chief dispatcher, which is used for regulating the movements of all dirt and construction trains in the excavation of the canal basin. These circuits are cut in at many small towers at which points the yardmasters are situated.

Three Divisions

The telegraph and telephone department is divided into three divisions, each under a supervisor. The Atlantic division comprises the exchanges at Colon (Cristobal), Toro Point, Mount Hope and Gatun. There is a four-position board at Colon, a three-position board at Gatun and one-position boards at Mount Hope and Toro Point. At this last place will be located the government fortifications which are now in the course of construction.



The Route of the Canal Across the Isthmus of Panama.

The central division comprises the towns of Gorgona, Bas Obispo, Las Cascadas, Empire, Culebra, Pedro Miguel and Miraflores. These towns extend over a territory 15 miles in length along the canal and all are served from the one exchange located at Empire, where there is a four position board.

The Pacific division embraces two exchanges, one at Corozal, where there is a one position board, and another at Panama, where there is a two position board.

There is a private branch exchange in the central division canal headquarters at Empire. There are private branch exchanges at Culebra in the chairman and chief engineer's headquarters, at Empire in the central division headquarters, and in the civil administration headquarters located in Panama (Ancon). There is also a private branch exchange in the Hotel Tivoli at Ancon with some two hundred extensions located in the rooms of the hotel. There is a new hotel building at Colon to be known as the Washington Hotel, on the sea front, which when completed will also have a private branch exchange with a telephone in every room.

In addition to the supervisors in charge of the three divisions, who report direct to the superintendent, there is a supervisor of traffic who is responsible for the operating department, and a supervisor of switchboards and cable construction, who likewise reports to the superintendent.

Panama Telephone Directory.

Although only about 50 per cent. of the telephone users upon the Isthmus call by number, there is a telephone directory printed. This contains also a complete list of all officials and employes who are likely to call or be called on the telephone in their respective offices. The listing of these unnumbered subscribers, so to speak, is under the nearest telephone through which they can be reached, and also under the respective departmental heads. This makes quite a pretentious book.

The directory is compiled as follows: Each office forwards to the supervisor of traffic a weekly directory report covering all installations, removals and changes. The supervisor of traffic from these records compiles a monthly directory report, a copy of which is sent to each office for final corrections, and from this corrected list the printed directory is compiled.

High Grade Service and Typical Loyalty.

It may be interesting to know that there are young American girls employed as telephone operators in these exchanges, handling from 150 to 200 calls an hour with the thermometer registering 100 in the shade most of the time.

I might relate an instance which occurred one afternoon

at the Gatun Exchange. Fire was discovered in the second story of the building, whereupon the operators immediately notified the fire department, the supervisor in charge and the superintendent. In a few moments, the entire upper story was a mass of flames, but not one operator left her board. When the water began to leak through upon the board, they covered it with a canvas and then raised their parasols to keep the water off of their heads. Service was not interrupted, and the fire was extinguished with practically no damage to the equipment.

View of Telephone Building at Gorgona, Showing the Cables Entering Exchange.

Possibly we wonder how we have American girls as telephone operators upon the Isthmus. They are usually relatives of the Americans who are employed on the engineering work.

No operators' school is maintained. The beginners are taught by the chief operators of the several exchanges. Speaking of standardization, however, it might be said for them that they take pride in giving the same three-second service that is found in New York.

The Telephone Building at Ancon.

The Empire Exchange Building and Its Surroundings.

INTERESTING COMPARISONS.

The following is a little comparison of a few figures I have picked up:

10,000 loaves of bread are consumed daily, or one loaf of bread is eaten to every two telephone calls made.

5,000 bags of cement were laid daily in the construction of the Gatun locks, or one bag of cement was used for every four telephone calls made.

HOME AND OFFICE ON RAILS.

One might imagine that in the operation of the various departments, such as the telephone and telegraph department, that there would be considerable routine, or "red-tape." Along this line I might relate some of the methods in which orders are received at the offices for the transferring and removals of telephones, which are situated in nearly every conceivable place.

When a supervisor of the canal construction work is located in an outlying territory, he is usually furnished with what are known as camp cars,

or his home and office on rails. Possibly, he will have his family with him as well as his staff, and it is not an uncommon sight to see a couple of old box cars with sash curtains in the windows and surrounded by a bed of flowers. One car will be the living room and sleeping quarters, another will be the kitchen and dining room, and you will find the bath room built between these cars, the "fixtures" consisting of a barrel, located upon the top of the cars, in which they gather the rain water—and this is their shower bath,

The Switchboard in the Telephone Exchange at Christobal.

In each one of these camps there is a telephone, as the construction supervisors receive and transmit by telephone most of their orders relative to the work. When it becomes necessary to remove one of these camps, little is thought in regard to the disconnection of the telephone. Quite frequently before the order is received to disconnect, the transportation department has sent a switch engine to move the outfit, and upon the arrival of the telephone man, all he can find is the remains of the line.

Hurried orders are sometimes received for the removal of the telephones located in the yardmaster's towers when the tower is located in the vicinity of a blast. If the telephone man does not get there in time, he usually finds the tower, telephone equipment and all in ruins.

CONSTRUCTION DIFFICULTIES.

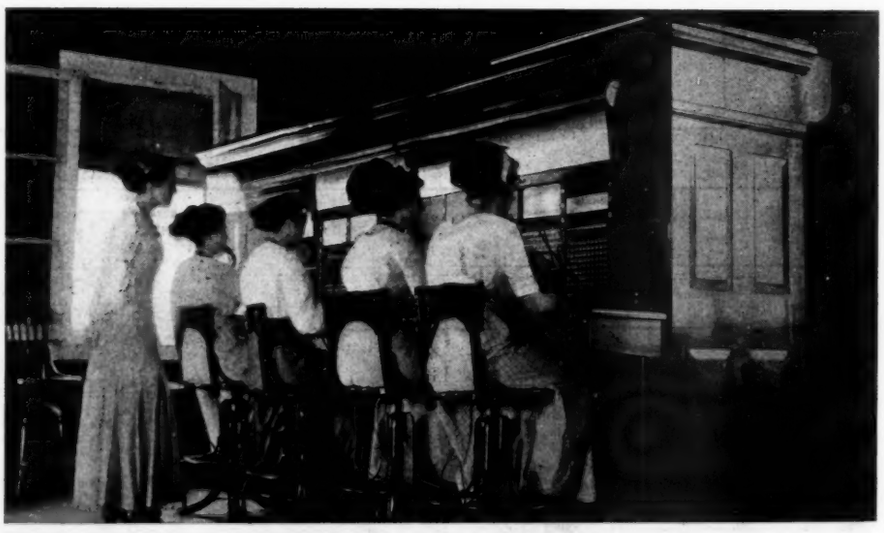
Someone might ask, "How is the trouble hunted?" Colored men are used for the outside trouble hunting, and they need no climbing hooks for all of the poles consist of railroad irons. Rails are used exclusively, since wooden poles cannot be maintained any great length of time on account of the ants that will cut into a wooden pole and before long leave nothing but the shell. Creosoted cross arms are used as a protection against these pests.

I might relate one instance where even the "ants" discovered the value of having a telephone in the house. They had followed the twisted pair into an office building and into the bell box which was fastened to the side of an oak veneered flat top desk. They bored through the bell box into the interior of the desk and had removed practically the entire pine wood of the interior, when the desk suddenly fell to pieces.

These busy ants, in their operations, when they feel that their presence might be discovered, construct a kind of tunnel of mud extending along the floor beams for the entire length of the building and come and go through this concealed passage.

One of the construction difficulties encountered has been the maintaining of the pole line through some of the swampy regions. In several instances the poles of railroad iron have gradually sunk into the ground until it became necessary to splice on an additional rail. In some places three such sections of rail have been found to sink down in the swamp while only 20 or 30 feet remained above the surface.

While the pole lines are of rails, the insulators are of Bell standard glass or porcelain, and the material and equipment throughout are of Western Electric manufacture. Besides the 20 odd physical copper circuits, extending across the Isthmus, there are operated very successfully phantom circuits between Colon and Empire, Gatun and Colon, Gatun and Empire, and Empire and Panama.



The Operating Room of the Empire Exchange.

There is also a double phantom in operation between Colon and Gatun, and several circuits are simplexed for telegraph purposes. Considering the climatic conditions, very little trouble is experienced in the maintenance of these phantom circuits. The transmission in general could be classed as easy commercial, considering the fact that the entire coun-

try is saturated with water for six months in the year; this indicates a very high degree of efficiency.

Owing to the extreme dampness and continual rainfall during the rainy season, considerable difficulty is experienced in maintaining the equipment. The terminal rooms have to be kept dry by electrical heaters. Heavy grounds are prevalent upon the trunk circuits during the night hours, due to the accumulation of dew upon them and the thousands of cobwebs that span the wires. These grounds disappear under the burning heat of the tropical sun.

OBSERVATORIES.

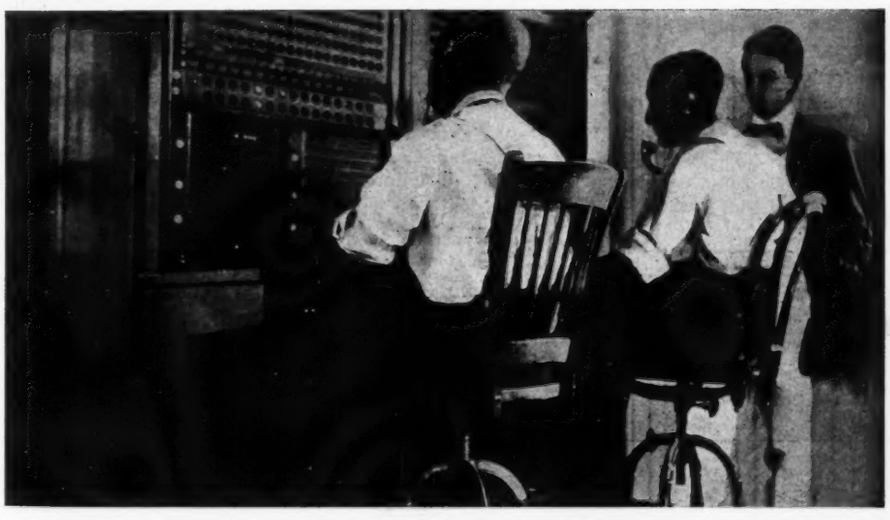
In the Canal Zone and throughout the entire water shed observatories are maintained. There are probably as many as 100, which furnish records of variations in temperature, rainfall, the rise and fall of the numerous streams which feed the Gatun Lake—the reservoir for the operation of the Gatun locks—and, in fact, every conceivable kind of information which would be of value in connection with the building of the canal and its operation for years to come. The establishment of these observatories dates back to the beginning of the American occupancy and thus for about seven years the data is available. This is of inestimable value and will become more so as further information is tabulated yearly.

All of these observation stations are connected by telephone and during the rainy season observers are constantly reporting conditions day and night by telephone to the principal hydrographer at headquarters at Culebra. An incident in connection with one of the most important of these observations, that at a place known as Alhajuela at the head waters of the Chagres River, both illustrates the value placed upon telephone facilities and the difficulties under which they are maintained.

A Native Panamaian Home Near Empire.

TROUBLE HUNTERS.

The chief operators make daily tests that any trouble may be immediately located. On this Alhajuela line two colored men, employed as trouble hunters, constantly patrol the line which extends through nothing but jungle for a distance of about 30 miles. Unlike our trouble hunters of the states, each one is equipped with a machette, very similar to a large butcher knife, with which he clears the way. Starting out at each end of the line, they cut their way until they meet, when they turn back and resume the same operation, as the vegetation has grown so rapidly behind them in the meantime. These men live along the line and find their substance wherever they are able to locate a patch of sugar cane or bananas.



Panamaian Operators Are Employed in the Panama Exchange.

"TELEPHONE YOUR ORDERS."

The commissaries and hotels are maintained along the line of the canal by the United States government, with headquarters at Colon where the wholesale warehouses, cold storage and ice plant and bakery are located. The supplies are sent out daily by a special train which distributes them to the various hotels and commissaries along the entire length of the canal. All of the commissaries are connected by telephone, and a special circuit is provided between eight and nine o'clock every morning by which the commissaries place their orders for the following day. In the same manner the hotels make their requisitions for their daily needs. This arrangement was due to the congested traffic during the hours when the commissaries and hotels found it most convenient to place their orders.

The system is worked out as follows: Promptly at eight o'clock each morning a special circuit is established between the chief operator's desk at Empire and the order clerk's desk in the subsistence department at Cristobal, the order clerk at Cristobal being provided with a head receiver. A special operator is detailed at Empire to call all the commissaries and hotels,

one after another, in both the central and Pacific divisions, to allow them to place their orders. When this circuit is taken down, the Gatun chief operator establishes a similar circuit between Gatun and the order clerk at Cristobal, by which the commissaries and hotels within the Atlantic division likewise place their orders. Thus it will be seen that ordering by telephone has probably reached its perfection within the Panama Canal Zone.

Fire and Police Departments.

A modern fire department is maintained upon the Isthmus with headquarters at Colon, an automobile fire engine being located at this point. Electric fire alarm stations are installed at all the principal points and a paid fire department is maintained throughout the entire zone. The telephone is relied upon here, as elsewhere, in sending in emergency alarms.

The policing of the entire zone is under the jurisdiction of the United States government, with the exception of the cities of Colon and Panama, which are under the Panamaian government. Police stations are maintained throughout the zone with headquarters in Ancon. There will also be found policemen known as the "Train Guard" upon all passenger trains over the Panama Railroad, one being detailed in the second class section and one in the first class coaches. A penitentiary is maintained at Culebra, where some 150 or 200 convicts are kept. These convicts are used in the building of the Canal Zone roads. All arrests and disturbances are reported by telephone from the outlying police stations to police headquarters at Ancon, where the records are kept.

Sanitary Department.

To the sanitary department must be credited one of the greatest achievements in connection with the building of the Panama Canal. At every settlement and construction camp along the line is located a sanitary inspector. The extermination of the malarial and yellow fever mosquito is due to the constant efforts of these men. No stagnant water is allowed to remain in the ditches and culverts. Drains are provided to take care of the constant rains and immediately following a rain storm colored men are sent out with spraying apparatus to spray the ditches and culverts to prevent any chance of the mosquito breeding.

Oil is used extensively by being placed in cans and allowed to drip continually wherever there is water, so that the mosquito is unable to find any stagnant water. The grass and other vegetation are kept continually cut in the vicinity of the settlements and strict sanitary regulations are enforced regarding the care and disposal of refuse. All through the zone, large metal cans will be found, even in the jungle at the native's hut, and by this method no decayed matter is allowed to lie around. The canal is drained by an enormous ditch which extends through the center of the canal, and at certain points pumping stations are operated to pump this drainage water out of the canal into the rivers.

Transportation Problems.

One of the greatest problems in the construction of the canal is the transportation of the 35,000 odd employes to and from their work. The construction department works from seven A. M. to eleven and from one P. M. until five. The men are transported by labor trains, which consist of eight to ten covered flat cars with seats. One or two cars are reserved for Americans, others being used by European laborers and the balance by colored laborers.

These trains stop at all points to distribute men, and return at night picking them up along the route when their work is finished. The labor trains are run on the construction tracks in the bottom of the canal.

One would expect to find the canal deserted after the whistle blows, but to the contrary, the emergency repair work and delivering of fuel for the hundreds of steam shovels take place during the night. Coal trains start out through the canal and distribute coal to the various steam shovels along the route. Following the coal train come the repair and wrecking crews, whose outfit consists of a machine shop on wheels and an enormous wrecking crane, with which they do whatever work may be necessary wherever it may be located.

Train Dispatching by Telephone.

Wherever it is necessary to direct the movement of trains throughout the Canal cut, a tower is located, with a telephone installed. There are hundreds of them, as at switching points and all track terminals. When a dirt train, for instance, has been loaded, the conductor in charge signals his yard master, usually by means of flags; the yard master telephones the train dispatcher and is instructed as to the direction and destination of the train. In turn, the yard master at the dumping point is notified by telephone. We hear him shout his orders to the switch tenders, such as that a "left hander" or a "right hander" is on track No. 4. This signifies that a train loaded with dirt is coming and that the cars can be dumped only from the left hand side or the right hand side, as the cars are open on only one side.

This information is given that the train may be sent out on the proper track upon the dump to be unloaded. Steel plates are placed across the openings between the cars, and when the train is loaded, there is one continuous mountain of dirt its entire length.

The manner of unloading the train is interesting. An enormous steel plow the width of the cars is backed up to the rear of the end car and is pulled forward by a massive steel cable operated from the engine, dumping out the dirt in its progress. It is surprising how quickly a train of 20 or more cars can be unloaded in this manner.

Besides the system operated for the government work, there are two independent companies upon the Isthmus. The Isthmus Telephone Co. operates two exchanges, one at Colon and one at Panama City. Connections can be had with the Government sytem by trunking through the Panama Railroad Co.'s offices. This traffic is handled on a message rate basis.

The other company is in Panama City and gives local service only. The exchange of this company is operated by Panamaian girls, and Spanish is spoken entirely. When a Spanish gentleman answers the telephone, he says, "Quien hablar?" i. e., "Who speaks?" then conversation begins.

Col. Goethals' Remarkable Achievement.

Col. George W. Goethals, chairman and chief engineer of the Isthmian Canal, is more than fulfilling his early predictions, for recently he has announced that the canal will be opened for navigation on October 23, 1913, although it will not be officially opened until later. He is thus anticipating all expectations by more than a year.

Our readers will probably be particulary interested to learn what an important part in the consummation of this greatest engineering achievement of all the ages has been played by the telephone.

Illinois Association to Meet in January.

The Illinois Independent Telephone Association will hold its annual convention on January 14, 15 and 16, at the Jefferson Hotel, Peoria. An interesting program has been prepared and it is believed that the three-day event will be even more largely attended than was last year's convention. Full details will be given out later.

The Last of the Year

The March of Time—The Morgan Matter

By J. C. Kelsey

At the end of my third year in TELEPHONY, I am tempted to make a sort of a commercial speech, if you will forgive me.

Three years ago, when asked to write a weekly story for TELEPHONY in the interests of Independent telephony, as it was observed then, I thought it would be a question of but a few months until, as George Ade says, I would "burn low and go out."

A year went by before I realized it—then two years flitted by, through the critical La Salle Hotel convention—then three years, until today I am facing another year.

As I have often said, writing is a very peculiar occupation, or "pastime," as some call it. One is bound to step on somebody's toes; to offend friends; to make enemies more implacable than ever—lasting beyond a life-time.

It makes no difference what the topic may be, purely telephone matters, political, religious or what, you can always find a fight.

The greatest American habit today is the habit of contradiction. We pet our beliefs and hobbies to such an extent that we quickly resent anything contrary.

If you don't believe that contradiction is our national habit, make an assertion—even a mild one—before any group of friends or strangers, and you will quickly realize my proof.

Looking backward over the past three years, and even 12 years, we have seen many contradictory things in telephone circles.

I remember well of longingly looking over the gate at the Coliseum convention, being able to get no further because I was alleged to be a Bell man.

The very men who controlled that Independent convention have either gone out of the telephone business or are crying out in the market-place that two telephones in one place are a nuisance.

The conventions bristled with hostile resolutions. They were annual Roman festivals. It almost became a habit!

Even yet, some people wonder why this column does not bristle with bayonets or pepper. The answer is that the need of bayonets is past.

The first Independent man who had Bell connections on his switchboard was thrown out of the national convention. Today, few state conventions are without Bell long distance franks, freely given and freely accepted.

No one can dispute with the march of time—its facts are ever plain. Conditions today are manifestly not those of yesterday. That is why I question the future need of this column, which you could have read every week for three years.

When we were busy with the defense of orthodox Independent telephony, as taught us by promoters, there might have been some excuse for the severity of this column. If you read back, you will be convinced that I always called a spade a spade, too. Today, is there the same need?

The principal need today applies to Bell and Independents—both have learned much of the law of evolution, decay and fleeting time. Both need more money or higher rates for services rendered—as a general rule.

We have always been and will ever be handicapped by the economical enthusiasm of our pioneers.

Talking about the march of Time, I have this year been more impressed than ever before. As I write, I am at my boyhood home—on the old homestead. I have just buried a pioneer Kentucky and Kansas woman, my grandmother.

This is not a genealogical story. It is told merely to illustrate the youth of our country and the rapid changes practically all in one woman's life.

Born soon after the war of 1812, she grew up in the wilds of Kentucky, and moved to Kansas in 1854. Her grandfather served in the American Revolution, of 1776, and her father in the war of 1812. Her brothers and brothers-in-law marched away to the Mexican war, her sons to the Civil war, and her grandsons to the Spanish war.

Think of it—one life spans our national growth, one life familiar with the events of 1776 by word of mouth, and 1912 from the newspapers.

She saw the telegraph and railroad born to commercial usefulness; the reaper, sewing-machine and cotton gin accomplished; the arc-light, phonograph, incandescent light and the telephone passed before her view; the X-ray, the wireless, the automobile and moving picture, the flying machine—all were familiar to her.

She read of Andrew Jackson's struggle with the national banks, was familiar with the deeds of Hamilton and Burr, the Dred Scott decision, etc.

She remembered well the supreme court decisions of John Marshall's chief-justiceship; she saw the supreme court call a halt on Rockefeller and Harriman, and even knew the aims and purposes of the Pujo committee at Washington.

So, in one quiet life, more history has been made in our land than in some nations with one thousand years of activity.

Don't you think Alexander Hamilton would be aristocratically surprised at the Union Pacific decision—and shocked because a committee of human beings has actually summoned J. P. Morgan to Washington and made him wait outside of the inquisition chamber?

Possibly you were surprised, too. But he went and took good care of himself. The man of 77 years proved himself to be really and individually remarkable.

Pitted against a most clever lawyer and hostile judges, as it were, this financier surprised everyone. He astonished the public, the Pujo committee, his family and his partners.

He never made but one address before in his life. Then he read his speech—he dared not trust himself. But when this man faced the Pujo committee, he proved to be the best witness of all.

He went far out of his way, explaining and informing, anxious to be complete and to give all information.

Not long ago, Rockefeller was on the witness stand. He evaded points with fox-like cunning. He saw jumps ahead of the opposing lawyers, and they got little out of him.

J. P. Morgan was big and broad, breathing optimism and hope, and highly temperamental—akin to an artist.

Rockefeller was distrustful and dissembling, with a narrow viewpoint, still the cold, calculating and close-mouthed bookkeeper of Standard Oil.

Today the public distrusts Rockefeller. And trusts Morgan more. J. P. Morgan made friends, while Rockefeller made more enemies.

Rockefeller hurt finance and gave it a bad name—something to be avoided. Morgan helped finance and gave it a good name, although the public has realized that it is dangerous for few men to have such great power.

Alexander Hamilton, in a sense, foreshadowed the Morgan idea. Hamilton favored a sort of a monarchy because he believed that the people at large had little or no responsibility or ability to operate a government. Mr. Morgan has the same idea, only it is applied to finance.

Just as monarchy is all right if you are sure to have a good king, so is Morgan's dominance of finance justified. But what will happen when he passes away? That is what the public asks.

Put yourself in J. P. Morgan's shoes. He frankly said he preferred combination to competition, although he did not object to competition. He did not even need to say it, for that is the tendency of modern times.

Another point he brought out was that the real good security underwritings were handled by the so-called Morgan banks, while, if the securities were not so good, they were distributed among the other institutions, and which did not refuse to take them.

I can't see just what the senate committee hopes to accomplish. We all know that great industries in the process of organization have to get consent in New York. The money is there, in fact as well as fiction.

In the panic of 1907, the Bank of Montreal was caught with half of its deposits in New York—$60,000,000.

Ten New York banks today carry $250,000,000 in cash. The other 25,000 banks had the remaining billion—but it was scattered and working overtime.

If each individual depositor took a notion to withdraw his deposit and invest in a local industry, the whole monopoly of money would soon be shown up as a dream—it would go up in smoke!

Like almost everything else, the question of money monopoly is a local issue. We kick on speculation and Wall Street, yet these very gamblers get money at cheaper rates than country business men. Our financial system makes large city banks act as reserve centers. This money must be kept as near liquid as possible. Therefore, they prefer to loan on bonds and stocks rather than on commercial paper, or constructive enterprises yet to make a name and reputation.

So the New York Stock Exchange gets the unsolicited job of using one-fourth of all our money.

Do you blame them?

There is about $1,800,000,000 of real money or bullion in our country. The value of our latest crop of farm products was $8,000,000,000. If the farmers simply sold their crops and put the money in their stockings, they would humble every so-called money monopoly.

As long as we feel good and have no panicky feeling—optimistic and good humored, and no one disputes our credit, then we have something which resembles a monopoly.

But if each of the 25,000 banks got scared and asked for their money for the benefit of the local depositor, the farmer, the harness-maker and baker, you would see anything but a monopoly.

The law makes New York supreme. Country banks keep three-fifths of their reserves at a central city reserve bank. A country bank with $50,000 reserves can put $30,000 at work in a city bank, and the process goes on until the New York bank gets it.

And you may be sure that the New York banks have to hustle to pay expenses and keep up their end. They are not in business for fun. If you saw the faces of men of New York at their lunch, you might know that their struggle is not worth while.

The man in the country who is demanding the demolition of the New York stock exchange and other institutions, does not really know what he is talking about.

Say, if you were man enough to be president of the Pennsylvania Railroad, you would feel pretty sure of a job, wouldn't you? Yet the last president was fired out just as simply as if he were an incompetent brakeman.

In spite of the fact that President McCrea had only a few years to serve to get a pension, they fired the poor man outright. Everyone has his troubles.

There are nearly 100,000,000 people in our land. Yet we have only 157,000,000 silver dollars. Is it not an awful handicap?

The world spends a great deal of time troubling over foolish details. We only care indirectly about the limited number of silver dollars, because they slip through our hands so fast.

We, as telephone men, can face the coming year with considerable pride and satisfaction. This has been a great telephone year. Every manufacturer reports record-breaking output.

The manufacturer is the real barometer of Independent telephone conditions.

Independent manufacturers, in addition to ordinary burdens, have to share the field with the Bell factory. This is admittedly an unfair condition, and the chances are that it will be remedied with fairness to all concerned. The Bell factory can be reasonably expected to get a good share of the Independent business.

It all goes to show that the alleged weakening of Independent telephony is a myth, pure and simple.

Conditions have changed greatly and sensibly, too. Companies are reconstructing on a permanent basis and each one is in good financial condition.

Three short years have changed our map, so to speak. That is why I question the need of a continued discussion in TELEPHONY, especially since these changed conditions have wonderfully increased the number of sensitive readers.

No man is so sensitive as one who is conspicuous in any activity and then has had to reserve himself. I don't care a fig about the enemies this column has made. Some one has to hew the wood and draw the water. Some one has to be the "goat." Why should I dodge this responsibility?

If this column has accomplished any good whatever, it is all I ask. Every man dreads to be a bore. If I have become one, I would love to get the news at first hand.

Life, these days, is certainly worth while. I look forward to 1913 with the greatest of interest and anticipation. I believe we have no reason to be unhappy. We are in an era of good feeling.

All of us cannot hope to be big enough to be worth investigating. Why be discouraged?

MORAL: Treasure every hour of the coming year.

The Man Who Is a Gentleman

By HERBERT KAUFMAN

He remembers his own mother and is therefore considerate in thought and deed of all her sex. He neither degrades them by act nor by word. He will not utter a lie about a woman, but if need arise, and he may thereby spare her hurt, he will gladly lie in her cause.

He indulges in no excesses. He is master of his appetite, and does not lose control of his passions, his judgment or his voice.

He estimates no man except through his own experience, and then he forbears to pass judgment until he is certain of his knowledge.

He does not spread scandal, nor does he permit it within his hearing.

What does not affect himself he remembers to forget.

He does no wrong but what he immediately seeks to right it, and with his own hands.

He is as eager to apologize as he is loath to offend and is always anxious to acknowledge an error.

He does not mistake words for deeds; therefore his politeness is more than a polish.

His given word is his pledged bond, and the bad faith of another never justifies its default any more than the theft of his own property by a neighbor would lead him to retaliate in kind.

He obtrudes neither his religion nor his politics, recognizing the right of every man to his sincere beliefs. He is never an objective critic, and when he passes criticism he does so with a full appreciation of its favorable as well as its derogatory function.

He bestows charity with a smile, and then seeks to erase the sense of obligation in those whom he assists.

He advertises neither his good works nor his attainments.

He is gracious to all of lowly station or of advanced years, and never flaunts his better fortune before his inferiors.

He makes ostentation neither of his possessions nor his culture, realizing that his opportunities may have given him advantages which less favorable surroundings might not have produced.

He discusses his grievances with no one, not wishing to inflict his essentially personal worries upon his fellows.

He is cleanly of habit and of tongue, and prefers to find the world as himself.

He trades neither upon his name nor his birth, nor does he traffic in the power or influence of his friends.

He does not prostitute himself to business profit, nor does he request his women folk to sacrifice their personal inclinations in the cause of his advancement.

He asks no man to perform any service which he could not and would not perform without smirch to his own self-respect.

He regards wealth as a pleasant possession, but one which does not justify the cancellation of a single attribute of honor.

There are countless things which he will not do for the sake of money, because he knows how few real things money can do in return.

Above all else, he is a gentle man.

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The Telephone Inspector and the Troubleman

Continuation of a Series of Articles Begun in the September 7 Issue of Telephony—They Deal in an Elementary and Explicit Manner With Many of the Problems Encountered by Telephone Men in the Operation of Small Exchanges

By A. E. Dobbs

Will Makes a Blunder.

"Say," said Will, coming in two or three days after the construction work was completed and the men laid off, "there was a trouble this morning on 411 I could not find. The man's bell would not ring, and I took down a couple of dry cells and renewed the battery. That didn't seem to make any difference, though I could call central, and talk all right."

"Well, you are a peach," replied George, sarcastically. "How in blazes did you ever come to think of fixing up the battery to make the bell ring? Well, you're a good one."

"Why, that is what I saw you do one day," stammered Will, "for when 216 was open, you went down and found a loose connection in the battery, and it worked all right when you fixed that; besides, what is the battery for if not to ring the bells?"

"Well, now," said George, thus thrown on the defensive, "I give you credit for observing that, and of course, you have not been shooting trouble long enough to know everything; but that case was different from the most of them. The instrument was not properly wired in the first place, as the line wire came through the battery, and, of course, an open battery would produce an open line.

"When this exchange was built, the manager lacked experience, and wanting to see which instrument was the best, he bought a few of each kind. If a smooth salesman came along and offered him an instrument cheaper than any one else, he would buy it without looking at it. There are a lot of those in the back room now. When they are fitted with new receivers, transmitters, induction coils, switches, magnetos and ringers, they will be very good instruments. Of course, there is such a thing as making unnecessary expense in some parts.

"Now, you need not say anything about this to the subscribers, for when outside this office you want to keep a stiff upper lip, and never let on but that the instruments we have are the best in the world. It is sometimes hard though, to have to take the blame for all the trouble from subscribers and managers alike, and troubles for which, the lineman knows, the only cure is a vigorously wielded axe. We must put up with it until managers have learned their lesson." Meanwhile Will had not lost sight of his first question and now wished to know what the battery was for.

"See here," said George, going to an instrument and opening it. "Just begin with that battery wire and trace out the circuit."

"Here is the first one ending at one of the switch clips," answered Will.

"Yes, and when the switch is up, that connects it with the other clip. Now trace the wire from the other clip."

Will traced the wire down till he came to the transmitter, when he paused. "Now where does it go?" he asked.

Will Learns About Transmitters.

"Here," responded George, taking a transmitter apart. "You see this wire comes in and connects with the back plate of the transmitter. The circuit then goes through this mass of granulated carbon, see? Next through the front disk and connection is made with that other wire, making a loop through the granulated carbon. The shaking up of the carbon caused by the vibration when you talk against the front disk causes a variation in the resistance of the circuit and so makes a constant change in the amount of current going through. But to return to our subject; this wire has been traced from the battery to the transmitter. Now where does it run from the transmitter?"

"It goes to this binding post, to which two wires are fastened."

"Yes, it takes a white and a green one, and both go into the induction coil. Now, in order to find out which is which, we will try another tack, and trace the other wire from the battery. Here it is and you will find that it takes the white wire in that same induction coil, so for the present at least we will say that the green wire does not count. Now, did you find any bells in that circuit?"

"No," answered Will, who had sketched the circuit (Fig. 36) as he traced it out.

"Well, now, remember that. The battery circuit, then, consists of the upper clips of the switch, the primary coil, the transmitter and nothing more; and remember further that the order in which they are placed does not count, except as a matter of convenience. In case of trouble in a transmitter circuit there are three places where it is most likely to be located: first, in the battery; examine that carefully and see if your connections are all right as well as the cells. Second,

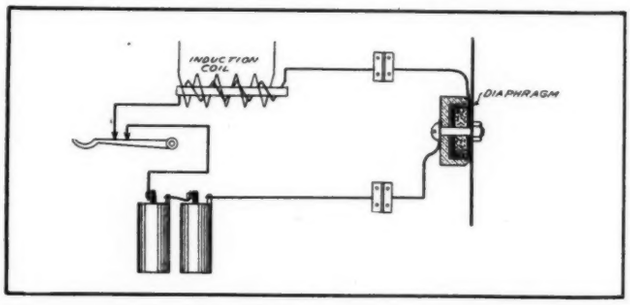


Fig. 36. Talking Circuit of Magneto Set.

the transmitter; there are several causes for transmitter troubles. For example, here we have one mounted on a hinged arm. There is plenty of room for suspecting trouble at the hinge, as the iron contact surface in the hinge is frequently rusted, and rust will act as a cut-out.

"Then, too, there is the transmitter itself which in the early types caused more trouble than all the rest combined. There were many chances for trouble especially in the cheaply made instruments, and it kept a man guessing where he was at. Sometimes the carbon disk was merely held down by the cap which covered the front, and which corroded enough to make a poor contact. Then in the Hunnings type of transmitter, in which poor carbon was used, trouble was experienced from the carbon getting down in one corner and packing so that the diaphragm could not move; this a good shaking-up generally remedied.

"This packing was generally caused by moisture getting in through the diaphragm, and several methods were used to prevent it. One man used oil silk or paper in front of the disk, while others were satisfied with giving it a coat of shellac; still others used a diaphragm of steel or aluminum, while diaphragms of mica, wood, cork, parchment and paper all had their turn.

"There was in some instruments of that type a fringe of wool, cotton, felt or fur, to hold the carbon granules in place, and it generally did. Sometimes, however, they got out of their places and worked down, so as to wedge the diaphragm. Then, too, it sometimes happened that a transmitter came from the factory with too much or too little granulated carbon in it, in which case the amount had to be changed until right. There was one solid back transmitter made, which was regarded as the best thing out, except that it would cut out; and a most puzzling affair it was, for I never could catch it long enough to locate it. I did finally find out what it was, by taking the thing apart and guessing the rest.

"In that case the trouble was caused by the use of too much carbon in the cup, so that if ever it did pack, it wedged tight. Removing the transmitter from the hook and I would 'get battery' in the receiver, but not a sound could I get through it. That trouble was cured by removing some of the carbon granules.

"Some salesmen I have known made it a point to hold the receiver up against the front of the transmitter mouthpiece, and if the receiver sang, it was supposed that the transmitter was all right. Now, I just want to remind you that this test only proved that the *receiver* was all right, and that the transmitter circuit was closed. It did not prove that the transmitter was good by any means.

"Then I saw a transmitter with a mica diaphragm backed by a small carbon disk in the center, which was connected with the frame by means of a German silver wire, stretched across from one side to the other. Of course, service on such a thing as that was very unreliable.

"Transmitters which are now manufactured give but little trouble," George continued. "They are put together in such a manner as to be the cause of practically no trouble after leaving the factory. All parts are inspected carefully before being assembled and before being sent out for use they are carefully tested. The tests are made by comparing the new transmitter with a standard, for talking qualities over an artificial line equivalent to several hundred miles. The instruments are adjusted so that they talk up well over these lines and are inspected for other defects which are likely to crop up during the tests. As a result of the careful adjustments and tests and also the improved methods of manufacture, the present types of transmitters are much more satisfactory than those used during my early days in telephone work."

"But some transmitters pack even yet don't they," queried Will.

"Yes, but not many in comparison with the number in use," replied George. "Nowadays it does not pay for us to repair or adjust transmitters. The few which are defective or do not prove satisfactory can usually be returned to the manufacturer for repairs or replacement.

(*To be continued.*)

Commission Reports to Congress on Patent Office

Following Investigation by Cleveland Commission of Economy and Efficiency Numerous Recommendations are Made Looking to Improvement of Conditions in Patent Office and Its System—Would Abolish One Appeal and Shorten Life of Patent

On December 9 President Taft sent to Congress the report and recommendations of the Cleveland Commission on Economy and Efficiency following its investigation of the Patent Office, which was ordered to be made by Congress.

The report, which is an exhaustive one, covering 1,100 typewritten pages, is interesting in that it recommends many things which Congress is expected to provide for, either by resolution directing the Secretary of the Interior to have them done, or by incorporating them in a new bill dealing with patent matters, says the Electrical Review and Western Electrician, which abstracts the report as follows:

The report recommends that the Commissioner of Patents be relieved from the duty of considering cases on appeal from the board of examiners-in-chief and from the division of trade marks, in order that he may give his entire attention to the administrative work of the office, and that he be assisted in the administrative work by one assistant commissioner of patents and seven supervising examiners.

It is pointed out that adequate control of the methods and procedure of the 43 examining divisions in the allowance and rejection of applications for patents is necessary to secure efficient work. The commission bases the recommendation that the Commissioner of Patents be relieved from judicial work upon the fact that the number of invalid patents issued is due largely to a failure to supervise and control the work of the examining force, leaving the decision on applications to the 43 principal examiners. Their decisions if favorable to the issue of patents, are not reviewed. If unfavorable the applicant can appeal.

The commission believes that if the Commissioner of Patents were relieved from deciding individual cases and had the aid of seven supervising examiners he could prevent almost entirely the issue of patents which should not be allowed.

The commission reaches the conclusion that the defects in the organization and procedure of the patent office result in a lack of uniformity in the work of the examining divisions. These defects are due to the organization remaining the same as it was 50 years ago, when the business of the office and the force of examiners were very small when compared to the conditions at the present time. With a corps of examiners numbering nearly 400 it is impossible for the Commissioner of Patents, with his present duties of deciding cases on appeal, to give to the administrative work of the office the attention that is essential.

Abolish One Appeal.

The commission has recommended that instead of an appeal to the board of examiners-in-chief and a second appeal to the Commissioner of Patents, the board be increased from three to five members, and all appeals within the office be taken to this board.

The commission recommends that the fee for filing an application for a patent be increased from $15 to $20 and supports its recommendation by the statement that the fee of $15 is too small to warrant the necessary time being given to the examination of an application. This change in fee, it is estimated, will increase the annual revenues of the Patent Office by $200,000.

Term of the Patent.

An important recommendation is that the life of a patent be so limited as to expire 19 years from the date of filing the application, excluding the time, not exceeding two years, during which an application may be involved in inter-

ference. The commission reports that under the law, which allows an applicant one year in which to answer any action of the Patent Office, there have been many applications kept pending in the Patent Office for 10 years or more. The commission believes that the remedy is to make the term of the patent commence from the date of filing the application, as is done in foreign countries.

Examining Applications.

The commission reviews at some length the work of reclassifying patents and digesting printed publications as an aid to determining quickly and accurately whether an applicant is entitled to a patent, which work has been in progress for some years. It urges an appropriation for an adequate force to complete this work within five years.

Raising the subscription price of the Official Gazette from $5 to $10 is recommended and a change in the method of distributing copies of this publication to libraries is suggested. It is recommended that instead of publishing in the Gazette the first five claims of a patent, a brief or summary of the patent be published so as to give a better idea of the patent.

It is recommended that all the work of producing the publications of the Patent Office be turned over to the government printing office.

Subjects Not Reported On.

In concluding its report the commission refers to several subjects upon which it was not authorized to make recommendations, such as the proposal to create a United States Court of Patent Appeals, to have jurisdiction in patent causes now exercised by the circuit courts of appeals in the nine circuits of the United States. It reports that the creation of this court is favored by practically all the attorneys interested in patent causes and by inventors generally.

Although it makes no recommendation upon the subject of the extent of the monopoly granted by a patent or the question of compelling a patentee to work his patent or grant a license to others to do so, the commission sets forth in an appendix the law and procedure of Germany and England on these subjects with papers discussing the patent systems of other nations.

Improving Patent System.

After a review of the history of the United States patent system the commission concludes that the remedy for the evil of granting invalid patents is not to be found in a departure from the plan of granting a patent only after examination, but in perfecting the examination system established 76 years ago and afterward adopted by other nations.

The great development of our patent system, as shown by the filing of 70,000 applications a year and the granting of 33,00 patents, has made inadequate, says the commission, the organization and procedure of the Patent Office, as well as the procedure in the courts. The commission expresses the opinion that to meet the conditions which cause complaint it will be necessary to build up the Patent Office so as to justify making its decision final on many questions and not allow every question concerning the validity of a patent to be litigated in the courts. Then, it is said, a patent will be more than a preliminary to a lawsuit, where often the victory rests with the one who can best bear the expense.

Experiences of the Small Town Telephone Manager's Wife

By Mabel Graham Knipe

Mrs. Hastings, the new telephone manager's wife, was just putting on her hat preparatory to making her debut into the social life of Fraley. As she pushed the last hat pin into place, she heard a light, quick step on the porch, and a cheery voice called:

"May I come in? I only want to use your telephone a minute," and a charmingly dressed young woman opened the door and thrust in her pretty head.

"Certainly," answered Mrs. Hastings from the head of the stairs.

"You don't know how glad I am that you moved into the neighborhood," went on the pleasant voice, as its owner took down the directory. "You see, Fred and I are trying to economize in every possible way so we can buy a little second-hand machine in the spring, and our telephone is one of the things we have cut out. I wouldn't have the nerve to use any of my other neighbors' telephones, for they have to pay for them, but I feel so free to use yours, seeing you get it free," she finished, as she found her number and called central.

Mrs. Hastings, whose husband was a stockholder as well as manager of the telephone company, could not help wondering how many years away their own "machine" would be if all their neighbors economized in precisely the way this one did.

At the little sewing party Mrs. Hastings found a group of pleasant, bright-faced, young women, whom she liked immediately. They made her feel at home at once, and she was beginning to thoroughly enjoy herself, when she heard a newcomer call to a friend across the room:

"What's the matter with your telephone? I called and called you about ten o'clock this morning, and couldn't get you."

"Goodness only knows," responded the other. "There's always something the matter with it."

"Why, my dear," interposed another woman, "don't you know you were at my house from nine to eleven this morning? You were not at home to answer it."

"That's right, I was," carelessly acquiesced the other, "but there usually is something the matter with it."

(Mrs. Hastings, whose cheeks had burned furiously all the while, resolved to have her husband look after this telephone immediately. He did so later, finding, as he had expected, that there had been no trouble reported from that source in six months.)

"Sometimes I certainly get mad enough at those central girls to go up there and pull their hair," now put in Mrs. Clearson. "Whenever I am over at my sister's and you know she only lives a half block from our house, and a call comes for me over our telephone, my little boy runs as fast as he can for me, and I run home with him. But, do you know, every time central has disconnected me from the party calling, and there I am. And it never takes me more than five minutes to reach home either." All the ladies shook their heads dismally over the total depravity of such operators.

"Well, I do hope, Mrs. Clearson, that you won't give them a lecture about disconnecting you too soon, for I have such a time with them about their forgetting to disconnect me at all, and I don't want them to get any worse about it," broke in Mrs. Deplain. "The other day I called a party, and talked just a second, and then rang for central, and, if you'll believe me, I had to ring the *second* time to get her." Everyone looked properly horrified. "The girl tried to smooth it over by say-

ing something about the drop not falling or something, but it made no difference to me, for when I am through talking I want to be disconnected. I don't want any fooling."

"And I want the connection to be left up until I can reach the telephone," reiterated Mrs. Clearson.

Mrs. Hastings, whose very ears were now crimson, as she listened to these arraignments of the girls, could not help think-

"Mrs. Hastings Listened to These Arraignments of the Girls."

ing of an old saying of an irreverent brother of hers about "they'd be damned if they did, and damned if they didn't!"

"All I want is service," said Mrs. Frame primly. "We pay for it and we have a right to it."

Mrs. Hastings was very sure Mrs. Frame's service was paid for, because only a short time back the company had sued her husband for six months' back rent and had collected it. Now Mr. Frame was forced to pay in advance or have his telephone disconnected.

Here pretty Mrs. Wainwright took up the burden of the song: "My husband has to talk long distance so much that they have fixed our telephone especially for it, and, do you know, it actually hurts my ear sometimes when I use it here in town—it comes up so clear and strong."

"How dreadful," exclaimed one lady.

"I wouldn't stand it," said another.

"They ought to give you a second telephone free for town calls," added a third. "You might grow deaf from using it. I knew a woman once——" By this time Mrs. Hastings was so busy swallowing a lump in her throat and blinking her eyes to keep back the tears that she lost the latter part of the sentence. She was debating making a dash for liberty when a new topic was broached and the ladies pounced on it without apparently noticing her discomfort.

Presently someone asked: "Does anyone know how Mrs. Jarred is today?"

"Better, I think," responded another. "But did you hear how near she came to dying the day before yesterday before they could get the doctor there?"

"Was he out of town?"

"Oh, no, his telephone was cut off."

"A doctor's telephone cut off?" shrieked thirteen ladies in chorus.

"How terrible," cried the fourteenth. "If Mrs. Jarred had died they could have sued the telephone company, couldn't they?"

"Of course they could," sang the chorus.

Mrs. Hastings could keep silence no longer. "Pardon me for interrupting," she said. "But I must tell you that Dr. Blank had neglected to pay his rent at the time every one has to, and they did not cut him off until he had been notified twice, and still he neglected to pay, and then they cut him off. I can not see in this instance how the company could be held responsible for the doctor's negligence."

"Oh, but a doctor's telephone is so important, I shouldn't think the company could bear to cut one of them off for fear something terrible might happen. I wouldn't think a manager's conscience would let him do such a thing."

Mrs. Hastings smiled. "Your husband is a grocer, is he not, Mrs. Dash?"

"Yes."

"I suppose he gives doctors unlimited credit, does he not?"

"Why, no, indeed," she indignantly replied. "They have to pay like other people. We show no favoritism in our business."

"And when your husband refuses credit to a doctor who owes already a big bill, doesn't his conscience trouble him for fear the doctor will starve to death and not be able to wait on his patients?" asked Mrs. Hastings quietly.

"How absurd," answered Mrs. Dash, disdainfully.

"A grocer is quite different from a telephone company," said another lady.

"Yes, indeed," added a third.

At this juncture Mrs. Comfort, a visitor from a neighboring town, skilfully steered the conversation into less dangerous channels, and it was she who drew Mrs. Hastings' hand into the shelter of her motherly arm as they left the party. "My dear, I want a little talk with you," she said as soon as they were well away from the others. "I could not help noticing how hurt you were at the ladies' criticisms of the telephone service. And, my dear, I want to tell you that I am sure I was the only one who noticed your discomfort.

"Because my husband was once in the business, I could thoroughly appreciate your situation. To the rest of them it is as natural to complain about telephone service as it is to breathe. And if you are ever with them again, you must not spoil their pleasure by making them feel that you are hurt by their criticism. Pretend you don't hear them. It is their safety valve.

"If they did not have it to fall back on, one would be complaining about the kind of celery Mrs. Grocer's husband had sent up that morning, another about the exorbitant price she had paid for her spring hat to Mrs. Merchant's husband, while others might criticize the way Mrs. Physician's co-partner had treated a diphtheria case, or how Mrs. Attorney's husband had handled a law-suit, or even some one might permanently offend the minister's wife by pulling to pieces her liege lord's sermon of the previous Sunday.

"Think, my dear, how terrible any one of these catastrophes would be, and do, for mercy's sake, let them take it out on the telephone company. To the average person the telephone company and its shortcomings are as choice morsels of conversation as the tariff and the road tax are to the farmers collected in the country store. Do take my advice," she added kindly.

"I'll try," responded Mrs. Hastings soberly.

Public Utility Law in Pennsylvania.

When the legislature meets at Harrisburg, Pa., on the first Monday of January, 1913, an effort is to be made to secure the enactment of a public utilities law which will make the connection of telephone lines throughout Pennsylvania obligatory upon all companies.

Formal Call for Pittsburgh Independent Convention

John H. Wright, on Behalf of Committee Appointed by Various Independent Associations in Recent Joint Convention in Pennsylvania, Issues Statement Giving Reasons for Meeting at Pittsburgh, January 16, to Form New National Association

TELEPHONY has received from John H. Wright, general manager of the Jamestown Home Telephone Co., Jamestown, N. Y., a formal call to Independent operators to the convention to be held at Pittsburgh, on January 16, for the avowed purpose of organizing a new national association. Mr. Wright's communication is as follows:

"At the suggestion of many Independent operators throughout the United States, a joint meeting of seven Independent telephone associations was held in Cambridge Springs, Pa., on October 11, 1912, at which meeting, among other things, was discussed the necessity and advisability of organizing a new national Independent association. A committee consisting of H. L. Lamb, California, Pa.; T. J. Schufflin, Butler, Pa.; E. D. Schade, Johnstown, Pa.; H. E. Bradley, Philadelphia, Pa.; Byron L. Moore, Buffalo, N. Y.; J. Walter Barnes, Fairmont, W. Va.; C. L. Jones, Athens, Ohio; H. E. Webb, Pittsburgh, Pa.; John Z. Miller, Erie, Pa.; A. H. Appleby, Jamestown, N. Y., and the writer, was appointed to thoroughly investigate the matter and report at the call of the chairman.

"At a meeting of the committee held in Pittsburgh, on November 15, 1912, nearly all of the members being present, it was unanimously decided that a new national Independent telephone association was necessary and should be organized at once, in order to properly protect the interests of the Independents. It was the consensus of opinion of those attending this meeting that the present national association is Independent in name only and that it does not truly represent the Independent telephone interests of the United States.

"For the purpose of perfecting this organization, a call was issued for a meeting to be held at the Antlers Hotel, in Pittsburgh, on January 16, 1913. (The Northwestern Pennsylvania Independent Telephone Association meets at the same place on January 15 and 16.)

"In this connection it may be pertinent to give a few of the reasons advanced why this new organization was deemed necessary. It was the opinion of this committee that the affairs of a national association pledged to maintain telephone competition and to properly further the interests of Independent telephony should not be administered by men in close alliance with the Bell-Morgan interests. Such alliance precludes the possibility of these men taking an aggressive stand in matters where the Bell company would likely come in for severe criticism or censure, for it would be very embarrassing for them to take up the Independent side of an argument and discuss it without fear of incurring the disfavor of the Bell organization.

"In voicing the sentiments of the committee for which I am speaking, I believe that it is unfair for those Independent interests who are carrying on an aggressive competition with the Bell company that men encumbered with Bell alliances should be in a position as directors of the association, to defeat, by inaction or otherwise, the very helpful assistance which the association should give to all Independent telephone interests.

"The directors of the National association are able and conscientious men and a number of them are no doubt absolutely loyal Independent telephone men, conducting their business in active and keen competition with the Bell company. Some of the directors, however, have recently closed deals with the Bell company in their respective states which brings them into such close relations with the Bell organization that they should really be classed as Bell rather than Independent operators.

"The inaction of the National association during the past year has led the Independents to believe that it is being dominated by interests not in sympathy with the Independent telephone movement and its every effort appears to have been to stifle rather than promote telephone competition.

"A national association representing the Independents should be Independent in principle as well as in name. There is no middle ground on which it can stand. And it is the desire of those who are associated with me in this movement that the new association be unhampered by Bell alliances; that its directors may feel free to discuss without fear or favor the important matters that constantly come to the attention of an active association.

"Personally, I think a national association should be formed to be officered and directed by fair-minded Independent telephone men who will pledge themselves to carry out an aggressive policy for the beneficial effects of the telphone business in general; whose members should be made up of companies which are not controlled by the Bell or Morgan interests. Each one of the officers and directors of the national association should be free handed, and when the Bell interests put into effect an unfair practice they should take up vigorously the Independent side of the questions and have the abuses remedied.

"It was the opinion of this committee that an association can be organized from earnest, honest and aggressive Independent telephone men who are making this business their life work and who have the ability and energy to organize instructive departments of beneficial effect to all Independent telephone men, and who can be relied upon to preserve and advance to the limit the fundamental principles of Independent telephony.

"There are many important matters which can and should properly come before such an association and there is great need at the present time for concerted action on the part of Independent interests for the organization of such an association as I speak of, rather than be compelled to appeal to the present National association, where the Bell interests are constantly represented and confidential matters cannot be discussed, and where every obstacle is seemingly placed in the path of progressive Independent action.

"I am hopeful that an organization pledged to carry out the policies above outlined may be formed in Pittsburgh and, when once properly launched, I believe it will have a wonderfully beneficial effect on the Independent telephone interests of the United States. To this end the committee solicits the support of every Independent telephone man who is in sympathy with the movement here outlined.

JOHN H. WRIGHT."

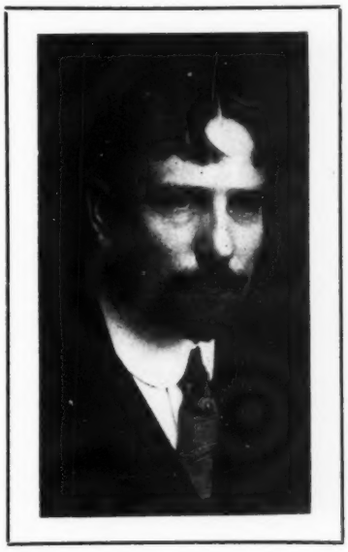
Ohio Merger Authorized by Commission.

In an order just issued the Ohio Public Service Commission has authorized the Champaign Telephone Co., of Rosewood, Ohio, to sell its property to the United Telephone Co., of Bellefontaine, for $9,525. As a part of the deal the United was authorized to increase its preferred capital stock by an issue of an amount equal to the purchase price.

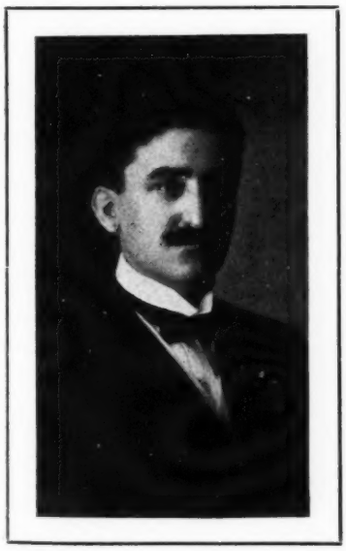
A Quartet of Men Prominent in the Telephone Field

ROBERT B. BABBINGTON, assistant treasurer and general manager of the Piedmont Telephone & Telegraph Co., Gastonia, N. C., was born in Lincoln county, N. C., August 24, 1869. He received his education in the grade and high schools of Winston-Salem, N. C. Before entering the telephone field Mr. Babbington was with the S. A. L. and Southern railways for 12 years, as agent and telegraph operator. He took up the telephone business in 1895, organizing and building Independent telephone lines in various sections of the South. He established the Gastonia Telephone Co., at Gastonia, in 1899. This corporation was reorganized and chartered as the Piedmont Telephone & Telegraph Co. in 1902. The present system is made up of 17 exchanges, covering seven counties and serving 3,600 subscribers. Mr. Babbington is a director of the Piedmont company. He is also a director of the First National Bank, the Gastonia Loan and Trust Co., the Gastonia Mutual Building and Loan Association, and the Armstrong Cotton Mills Co. He is a Shriner and a D. O. K. K.

KEMPSTER B. MILLER, consulting engineer and a partner in the firm of McMeen & Miller, Chicago, was born in Boston, Mass., August 14, 1870. He graduated from Cornell University in 1893, with the degree of M. E. He was in the United States Patent Office in charge of telephone work for some time. From 1896 to 1898 he was engineer for the Western Telephone Constr. Co.; from 1898 to 1904 he was engineer with the Kellogg Switchboard & Supply Co. Then he entered into partnership with Samuel G. McMeen, first in telephone practice, later in general engineering, including street railway and lighting and hydro-electric work. Mr. Miller is also a director in a number of manufacturing and public utility companies. He is a member of the A. I. E. E., the Western Society of Engineers and the American Society for the Advancement of Science. He is also a member of the Union League Club, Chicago; the Engineers' Club, of New York, and the Engineers', the Quadrangle and the City clubs, Chicago. He was present at the birth of the National association.



A. J. ROUSSEAU, manager of the Chicago branch of the Imperial Automobile Co., while he has been out of the telephone business since 1906, is nevertheless a well known figure in the industry, both in the Independent and Bell ranks. He was born in Chicago August 1, 1869. He attended the public schools of that city and graduated from St. Ignatius College in 1889. Immediately thereafter he entered the employ of the Chicago Telephone Co. Later he went into the lighting and street railway business. Returning to the telephone industry he became associated with various Independent concerns, mainly in the manufacturing branch. In 1906 he associated himself with the Buick Automobile Co., at first on the selling staff. Very soon after he was made manager of the Chicago branch and remained with the Buick and General Motors Co. until 1911, when he joined the forces of the Imperial. He has never missed a national telephone convention, although he has never held office in the association. He is a member of the Elks, K. of P., Foresters and various Chicago clubs.



LOUIS B. EATON, manager for the Federal Telephone & Telegraph Co., at Wellsville, N. Y., was born in Gaines, N. Y., July 10, 1872. He was educated in the local schools and in the Prof. F. M. Comstock private school, at Le Roy, N. Y. In November, 1889, he entered the drug business of Eaton & Co., at Le Roy. The company was also local agent for the Bell Telephone Co., serving about 30 subscribers. In the spring of 1890 he left the firm of Eaton & Co. and was made manager of the Bell exchange, which was moved into an office of its own. Mr. Eaton continued in this capacity for about 12 years, leaving in March, 1902, to accept a position with the Inter Ocean Telephone & Telegraph Co. (since succeeded by the Federal), as local manager at Le Roy. The Bell had at that time about 600 subscribers, while the Independent exchange was just beginning operations. Soon after the Independent had approximately 600 subscribers, the Bell list declining to about 400. In September, 1912, Mr. Eaton removed from Le Roy to Wellsville, where he has since remained as manager.

Practical Telephony for the Practical Exchange Manager

A Series of Articles Relating to the Construction, Maintenance and Operation of a Moderate Size Telephone Exchange, Which Began in the Issue of September 21, Expressed in Everyday Terms, Easily Understood—Principles Easily Applied

By H. R. Van Deventer

Another factor to be considered is the party line problem. While it is possible to place several parties on one common battery line, these parties cannot call each other without first calling central. Furthermore, being on the same line, transmission will be quite unsatisfactory if one of the parties is near the central office and the other is at the extreme distant end, as the current supply to the two instruments is unequal. This condition is illustrated in Fig. 24, the telephone *A*, getting nearly all of the battery, as it forms practically a short circuit across the line, leaving but little current for station *B*. Therefore for party lines, where it is necessary for subscribers to call one another, or where subscribers on the same line talk together to any extent, the magneto system is advisable.

The matter of selecting ringing should also be considered as to its operation in connection with the two systems. Where all ringers are of the ordinary bridged type, the operation with either system is the same. The biased bell system using positive and negative pulsating current, the ringers being legged off from either line to ground, is now seldom employed. When used with common battery, a relay is necessary to keep the circuit to ground open, except when the central office is ringing. This system of ringing may be used with either common or local battery equipment, being limited to four parties in either case. It is quite complicated when used with common battery.

The four frequency or "harmonic" system is perhaps the system now most extensively used for party line ringing. It may be employed with either common battery or magneto installations. To insure the best results the converter or machine from which the current is taken should obtain its current supply from storage cells. This is easy when the common battery system is used. With the magneto system, cells for this purpose alone must be maintained.

In the magneto system the generators used to call central, being operated by different people at various speeds, generate currents of different frequencies and there is always the danger of ringing one of the harmonic bells on the party line when calling the central office. This may be lessened, in a measure, by making the generators direct current or by weakening them by removing a magnet or two, but the possibility of trouble remains.

On long magneto lines, care should be taken in placing the harmonic instruments to install the lower frequency sets nearest the exchange.

To sum up the situation as to selective signaling: The harmonic system is best adapted to common battery, but can be used with magneto equipment provided certain precautions are observed. Common battery is most satisfactory for short lines having more than two telephones. Common battery lines must be kept within certain limits as to resistance and leakage. Magneto lines have no limits in these respects, as far as actual working is concerned, except the ability to talk and ring.

Party lines are necessarily magneto, as are also long lines.

Common battery operation is affected by outside conditions, weather, resistance, leakage, and other influences, more than the magneto or local battery.

Magneto operation is affected by equipment faults and adjustments more than common battery, especially as regards selective ringing. Magneto switchboard equipment needs less care and adjustment than common battery.

After carefully considering these points a prospective purchaser will still be in a quandary as to which system to use, unless he has had extended experience in considering such problems. There are two courses open to him. First, to secure the services of a consulting telephone engineer from whom he can get an opinion; or secondly, to submit the problem to the telephone manufacturers who, from long experience can give reliable advice. Submit it to more than one or two. The consulting engineer can advise best in regard to a large exchange, as such a proposition needs careful individual study. The opinion of the mnaufacturers may be taken as entirely reliable for small and medium size plants. The majority of these are alike and from long experience the manufacturers know what will give the best results.

It is seldom that a customer furnishes sufficient data to enable the factory engineer to advise intelligently. Something like the following should be given when information is desired:

A rough map showing territory to be covered with distances marked thereon; show business portion of town in which exchange is located; if there are poles of other companies, electric light or telephone, show them and give height;

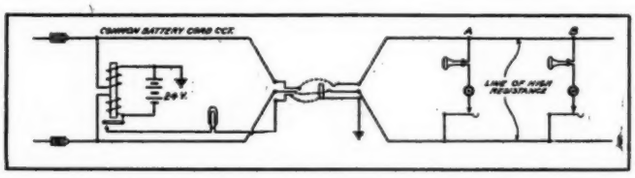


Fig. 24. Current Supply on Common Battery Line.

number of subscribers and their location; number of prospective subscribers and their location; number of inhabitants of each village or town; state whether there are any trees on street; give the proposed rates; state kind of party line service to be given and number of parties on a line; the name of next nearest company and make of equipment used; state if connection will be made with its exchange; send sketch of proposed operating room showing windows and doors, indicate what is underneath and above the room and, if there is a stairway, state its width and height; show where cables must enter the building; advise in detail any other points of value which will enable the amount of traffic to be determined.

If the same engineering skill were employed in laying out a small installation as is used on the larger ones, over one-half the maintenance charges would be avoided.

Some of the considerations as to the type of system to be employed under given conditions have been discussed and it is next in order to consider some vital points as regards the outside plant.

Many regard "telephone engineering" as some mysterious science, the key to which is possessed by a favored few who are known as specialists. As a matter of fact, in dealing with a small plant, "telephone engineering" is principally the exercise of foresight and common sense.

The building is usually undertaken by some one having at least some knowledge of such work. Personal qualifications

for the work have already been discussed, but there is one other qualification. It is that every man who undertakes the building of a plant should make absolutely certain, before the work is begun, that he has the proper financial backing to build the system in a practical, thorough and durable manner.

A few hundred dollars spent in the initial building will save future maintenance. If those financially interested cannot be made to see this, a self-respecting man should resign. If the owners think the manager's estimates are excessive or unnecessary, they can call in another engineer for consultation.

To illustrate where money spent is money saved, the question of cable in a small plant many be cited. Cable, such as ordinarily required, may be more easily erected, is more sightly; causes less trouble and has less depreciation than an open wire line. In the majority of small plants there is no need for multiple distribution of pairs, nor for the elaborate terminals such as are often employed. Modern, self-soldering potheads, terminals, splices, etc., have made the work possible with ordinary labor. Is it not foolish then to disfigure the main street of a small town with a six arm lead, when by the expenditure of a small extra amount, cable may be used?

Many are afraid to put up cable, owing to the supposed difficulty of locating faults. This was true in the days when the reflecting galvanometer, Wheatstone bridge and standard condenser were the testing means employed. Now the so-called "fault finders" easily find opens, crosses, damp spots, shorts, etc., without requiring any manipulative skill or even much experience on the part of the operator. Now it is easy to walk along an open wire lead and discover a broken wire, an incident is of common occurrence. It is now just about as easy to locate a cable "open," but such locations are seldom necessary, as the cable neither corrodes nor gathers sleet to the extent that open wire does.

Keep all lines off the street whenever possible; use the alleys or go over private property. With an open wire line this is usually objectionable, with a cable it is not. So-called "block distribution" such as used in Philadelphia, for instance, can be employed in the small towns with much success. Where houses are in rows with connecting walls or fences at the rear, twin or lead pair service wires may be run to a box at some central point. Where houses are detached, one high, ring top, distributing pole set midway in the block at the rear of the houses will often serve for every house on both sides of the street.

Do not be afraid to use twin conductors. Insulation has been greatly improved in the last few years and twin wire forms a durable cut-in, free from vibration, and requiring less support than open wire. Do not run twin wire where the covering will be scraped off or warp; for instance, over roof tops and through trees. The meanest thing in the world is to hunt a tip ground, in sleety weather, in a bunch of twin conductors running through trees. Avoid long spans unless No. 12 wire is used. Do not expect a 200-foot span of No. 18 wire to stand through a sleet storm, nor a terminal pole carrying 18 to 25 twin conductors, to stand without guying.

Regarding the type of ring top to be employed, the writer favors the form using ordinary transposition glass, insulators, probably the first type of ring or circle top extensively used. Later types using knobs or special fittings have been offered, but they do not seem to possess any marked advantage. It is best to dead end the house drops on the ring insulators and run the same paired conductor into the can top. To "bridle" up a pole of this description seems a waste of time and also results in a number of joints between the twin and bridle wires at the insulators.

Under this scheme, a cable, say of 25 pairs, is brought to one pole and from there connected to houses by means of paired distributing wire, a sightly arrangement which costs but little to maintain if properly installed.

With the open wire there would be: first, a line of poles high enough to clear all trees (a cable runs through these); then a pair of wires dropped off at each house, leaving the arm space beyond of the house vacant; then probably a short pole in each yard and then from 20 to 75 feet of paired conductor for the cut-in.

(*To be continued.*)

Eastern Traffic Association Meets.

The annual meeting of the Eastern Traffic Association of Independent Telephone companies was recently held in Philadelphia. The association is composed of 66 Independent telephone companies operating in Pennsylvania, New Jersey, Delaware, New York, Virginia, West Virginia and Ohio.

The annual report of the secretary brought out several interesting facts. During the year ended November 30, 1912, the association enjoyed an increase in its business of $47,368, the number of interchangeable messages handled being 1,007,349. This does not include the local messages of any of the individual members, but only messages passing over the lines of two or more companies. Had the local toll messages been included the figures would be at least four times greater.

There are in operation by the members of the association 5,942 exchanges and toll stations, over 400,000 telephones and 60,725 miles of circuits, representing an invested capital of nearly $50,000,000.

The following officers were re-elected: C. E. Wilson, president; Charles West, vice-president; I. D. Gindhart, Jr., treasurer; H. E. Bradley, secretary.

The executive committee consists of the following: C. E. Wilson, Philadelphia; E. M. Prisk, Philadelphia; J. G. Splane, Pittsburgh; E. D. Schade, Johnstown, Pa.; Cameron L. Baer, Harrisburg, Pa.; J. A. Haven, Brookville, Pa.; William H. Wilson, Erie, Pa.

Kansas Convention Big Success.

The three-day convention of the Kansas Independent Telephone Association just held at Hutchinson, Kan., is declared by the participants to be the best the association has ever held. Membership is now open to any independently owned company in the state, regardless of its toll line connections. A total membership of 166 is now shown. A detailed story of the meetings will be printed by TELEPHONY next week.

The former officers were re-elected, the place of W. P. Hemphill, who resigned from the board of directors, being filled by C. A. Sloan, of Pratt. The following are the officers for the new year: President, T. L. Youmans, of Osawatomie; vice-president, Samuel Tucker, of Pleasanton; secretary and treasurer, F. B. McKinnon, of Tonganoxie. The directors are: J. D. Waters, of Bonner Springs; A. J. Stevens, of Hiawatha; C. L. Brown, of Abilene; Olaf Larson, of Lyndon; L. A. Walker, of Parsons; A. B. Clarke, of Kansas City; and C. A. Sloan, of Pratt.

Cannot Force Removal of Pole Line.

Basing his decision on an act of the Kentucky legislature which gives a telegraph or telephone company the privilege of condemning a right of way along the road of a common carrier, Federal Judge Evans, at Louisville, has held that the Louisville & Nashville Railroad has no right to force the Western Union Telegraph Co., the contract with which as expired, to remove immediately its equipment from the Louisville & Nashville tracks in the state of Kentucky.

Practical Subjects—Letters and Discussions

Letters from a Retired Lineman to His Nephew.

Podunk Valley Farm.

Dear Ben:—

That bunch of specifications you sent, reminds me of a story one of my gang used to tell. It ran this way:

Pat and a friend were having a discussion about the miracles of the Bible. There was quite an argument about the Israelites crossing the Red Sea, or rather about the sea opening up to make way for them. Finally Pat said: "I'll tell ye just how it was. The sea froze over and they wint across on the ice."

"But," objected his friend, "here's a map in the geography, and it shows the equator running across the Red Sea. Now everyone knows it never freezes at the equator."

"Sure, sure I know that," replied Pat. "But ye must remember the crossing took place a long time ago, before Columbus discovered the equator at all." And so my day was before specifications were discovered at all.

Still I conclude they are a good thing, and no doubt with the extensive systems of pole lines of today, carrying wires over which so much important business is transacted, make uniformity absolutely necessary.

Overbuilding in the past, cost a great amount of money. I have seen miles and miles of line with from four to six wires carried on poles having nine- and ten-inch tops. Smaller poles would have served the same purpose, for long before the line was loaded to its capacity, new poles were required.

You say you have just finished a run of five miles of straight line, and in looking over it from corner to corner the poles lean forward in the line from one to two feet. There are several things to cause that, but I think you'll find that your wires were "tied in" before the slack was taken up. Consequently the poles had to come forward where the wires would not slip through the ties.

In making a "pull", the last pole tied in should be head guyed temporarily to the butt of the next pole back, and "dead end" ties also used for a couple of poles back.

You will probably find if you make a more careful inspection, that some of the ties are drawn out of shape and perhaps some of the arms pulled around several inches.

I suppose you could pull the poles back two or three at a time, but you'd run your slack back to the next corner and have to re-tie most of the wires anyway. About the only way, if your slack is even now, is to untie each pole, straighten it and dig enough on one side to tamp it securely into place. That would be my advice given from a distance.

You write that you expect to finish in about a month and are thinking of going back to Woppleton to take a contract to build lines for the company which is being organized there. Of course I don't want to stand in your way of getting along, but I'm still a little doubtful as to your experience and judgment.

There are many details to a contract of that kind and I'd be pretty careful, if I were in your place. Besides building in town you will find is altogether different from toll line work. The company is no doubt made up of good substantial men, but like you, they also lack experience. They are probably taking advice from a promoter who will not wait to see the plant in operation.

You know little or nothing about buying material, etc., or of the difficulties and delays you may have to contend with. If I were you, and wanted to tackle the job, I'd try to land it as general foreman on a straight salary. Nothing is worth quite as much to a man of your age as experience. Few people get it for nothing and few pay too much for it. It comes to us generally at its own price.

I was telling Doc. Stuver about you, and he says you should have stayed at school at least two years longer. He says half an education is a help, but the last half is the most important. Doc. is the only college man in town and he doesn't really belong here. He used to make up his mind to leave "next year" every spring about 20 years ago, but never got started. Sometime I'll tell you how he came to stop here in the first place.

That lineman I haul along the line has reported that I'm an old lineman, and they have cut in a test pole in front of the house, sent me a test outfit and telegraph me when they want a test. I didn't think there could be so many things wrong with a little job like cutting in a test pole, until the inspector came out and inspected the job.

In the first place the pole was side guyed only, and had to be line guyed both ways to anchors. All wires from the west were dead-ended on the top of the pins. Each alternate one had to be changed.

For back braces, ordinary cross arm braces had been used, so an eight-foot angle-iron brace had to be substituted. The tail wires were looped under the arms instead of above. The top arm having been on the line ten years, began to show signs of deterioration, so it had to be changed.

I got enough out of the job to buy a little better horse than the one I first picked out. We own a good sorrel, three years old. I expect to use him in driving the line and will divide what he earns pro rata.

The way potatoes are selling I have a notion I want 200 or 300 bushels. Can buy for 40 cents a bushel. Can get 60 day options on them for that, which will give me time to haul them myself. If you want to get in on the deal, send me as much as you care to invest. They'll bring about a dollar next spring, f. o. b. cars here.

We are as well as usual.

Your Uncle Dick.

The Way We Took Up Four Miles of Poles.

Having bought the lines of a competing company that paralleled ours, we deemed it unnecessary to maintain two toll leads. Therefore, we decided to take up and remove four miles of poles, a number of which were 20 feet in length. Being set deep, we could not cut them off at the top of the ground, as that would make them too short for the purpose we wished to use them.

After discussing with the foreman several methods of pulling up these poles, and debating as to the quickest way with the least amount of labor, we loaded on the wagon a carrying hook, some shovels and a long chain, and started for the work without deciding just how we were going to do the job. On the way out, we chanced to pass the residence of a farmer who used the blue sky for a shelter for a number of his farm tools.

Jack, the foreman, remarked, "There is a set of wheels you should have to attach to the back end of your motor truck to haul poles. That gave me an idea. We went over, examined the wheels and axle, which comprised the hind end of wagon complete, except for the coupling pole or reach, and found them in a pretty fair shape. I gave Jack orders to find something which would answer for a reach while I interviewed the owner, and found him willing to loan us the outfit for experiment. We soon had it hooked onto our wagon and drove to the place where we intended to begin work.

The "outfit" was backed up to a pole, the reach was raised high and the log chain was looped around the pole, drawn over the axle and fastened taut around the

reach. Then taking hold of the reach, we raised the pole half way out of the ground at the first try. Later, however, we found that it took three lifts to raise them.

A total of 132 poles was taken up in this manner without the use of a shovel and without lifting with the carrying hook, and it was done quickly.

I am writing this article hoping that it may help some telephone men, since it was so satisfactory to us.

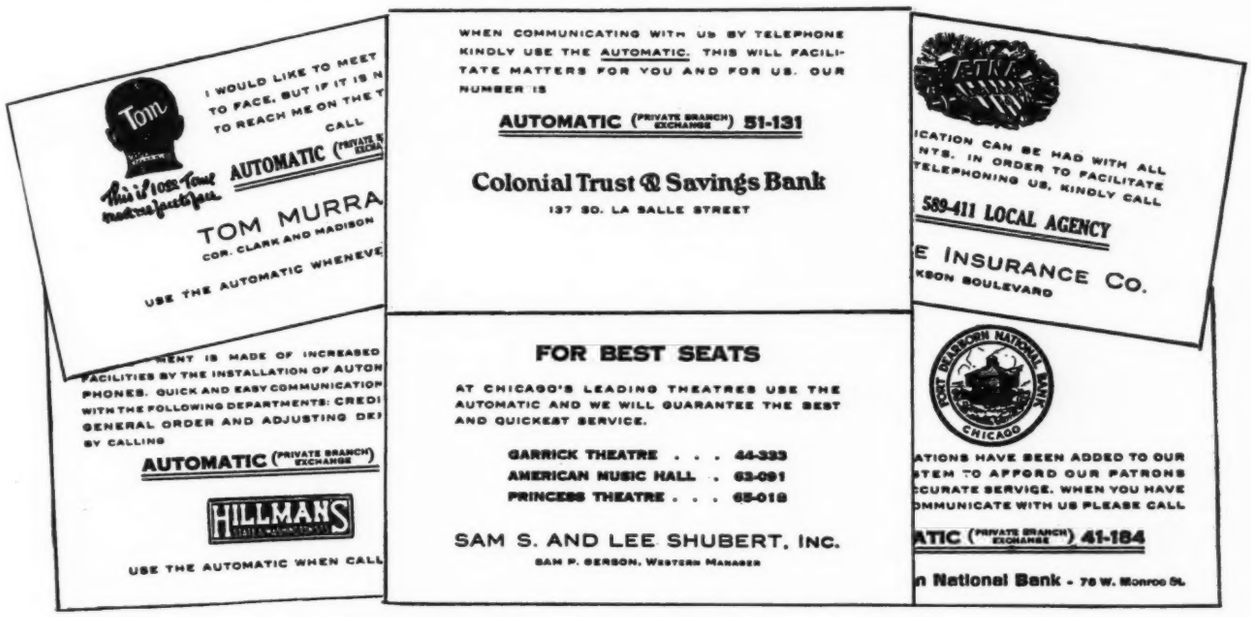
We found that, where there are ditch banks and other obstructions, a shorter axle was much better.

The Manager,

Encouraging the Use of Your System.

Many schemes have been worked out in territory where competing telephone companies operate to stimulate the use of one system as opposed to the other. One which is said to be comparatively inexpensive, while very effective, has been adopted in Chicago by the Illinois Telephone & Telegraph Co., which operates the automatic system in that city.

Heavy linen cards, of a size to fit easily into the ordinary commercial envelope, have been prepared for some


Tom
I WOULD LIKE TO MEET
TO FACE, BUT IF IT IS N
TO REACH ME ON THE T
CALL
AUTOMATIC
TOM MURRA
COR. CLARK AND MADISON
USE THE AUTOMATIC WHENEVE
FACILITIES BY THE INSTALLATION OF AUTON
PHONES. QUICK AND EASY COMMUNICATION
WITH THE FOLLOWING DEPARTMENTS: CREDI
GENERAL ORDER AND ADJUSTING DE
BY CALLING
AUTOMATIC (PRIVATE BRANCH) EXCHANGE
HILLMANS
USE THE AUTOMATIC WHEN CALL
WHEN COMMUNICATING WITH US BY TELEPHONE
KINDLY USE THE AUTOMATIC. THIS WILL FACILI-
TATE MATTERS FOR YOU AND FOR US. OUR
NUMBER IS
AUTOMATIC (PRIVATE BRANCH) EXCHANGE 51-131
Colonial Trust & Savings Bank
137 SO. LA SALLE STREET
FOR BEST SEATS
AT CHICAGO'S LEADING THEATRES USE THE
AUTOMATIC AND WE WILL GUARANTEE THE BEST
AND QUICKEST SERVICE.
GARRICK THEATRE . . . 44-333
AMERICAN MUSIC HALL . 63-091
PRINCESS THEATRE . . . 65-018
SAM S. AND LEE SHUBERT, INC.
SAM P. GERSON, Western Manager
ICATION CAN BE HAD WITH ALL
NTS. IN ORDER TO FACILITATE
TELEPHONING US, KINDLY CALL
589-411 LOCAL AGENCY
E INSURANCE CO.
KSON BOULEVARD
ATIONS HAVE BEEN ADDED TO OUR
STEM TO AFFORD OUR PATRONS
CURATE SERVICE. WHEN YOU HAVE
OMMUNICATE WITH US PLEASE CALL
ATIC (PRIVATE BRANCH) EXCHANGE 41-184
n National Bank - 76 W. Monroe St.

Promoting the Use of the Independent Telephone Service in Chicago.

of the company's best patrons. These cards, a few of which are shown here, are furnished the user, gratis, and are designed to be enclosed in his letters. The cards are, as may be seen, tastily printed; the paper stock is very good. There is nothing objectionable about them; nothing to prevent even the most fastidious from including them in his letters—and they are being used liberally. The plan was originated by C. W. Winkler, commercial manager of the Illinois company.

An Aunt's Letters to a Switchboard Girl.

TELEPHONE FLIRTATIONS.

My Dear June:

It is well that the question you ask is brought out this early in your work. You ask if a mild flirtation over the telephone, just for fun, can be harmful to a girl.

You may have so far, by your devotion to your employers' interests, built a firm foundation toward a good reputation and character. By one act you can destroy that, for, "as a jewel of gold in a swine's snout, so is a fair woman which is without discretion."

Be prompt to discourage the would-be telephone male flirt. Excellent speech is always becoming to a woman, young or old, but be forceful if the occasion demands, to protect yourself from presumption on the part of young men patrons of your line.

I know one little Central who nearly always meets anything of this nature with a giggle. The giggle is not dignified, but, don't you see putting a ridiculous face upon the matter sometimes lessens its importance?

The more lightly you converse over the telephone or anywhere else, the more lightly are you held in the estimation of your masculine friends.

Of course you have not yet any serious thoughts nor wishes about marrying, but did you ever notice that the best young men in a community do not take for wives the girls they have danced with oftenest, or with whom they have been freest in all good times? It is usually a surprise when the quiet, demure little church-going girl is led to the altar by one of the society favorites.

One girl I have known at the switchboard had a big brother. He frequently heard conversations between girls over the telephone and some one of a crowd of young men at different places. If you could all know the attitude of mind in which those boys stood by and prompted the speaker! My, you would never need a dab of rouge on your cheek to signal your resentment! You would have a color that would not come off!

Big brothers come in handy in those cases.

Remember that nowhere in public life should girls be more firm in all womanly and moral convictions, than in your place. It is deplorable that young girls must get into public life, but since it is a condition firmly established, make the best of it.

Every time I watch an innocent, wide-a-wake girl having what she terms a little fun, I call to mind this pathetic sequel to another girl's life:

THE GIRL AT MEAD'S.

"There lies in the undertaking rooms of Mead's, the body of a woman, 24 years of age, with handsome features, and trailing brown hair. Last night, by her own distracted act her breathing ceased, and now she wanders amidst the sublime mysteries of immortality.

A love affair in which discretion surrendered to much that is good and lovely, yet much that must be harnessed and chained, was at the bottom of this tragedy.

We have looked into the calm face, in which no trace of

hope or happiness can be seen, with an uncommon sadness at the fate of her who has ventured out into the gloomy waste and is lost in the heavy shadows.

Let us not discuss the right or the wrong, but rather lift up the torch of warning against forbidden fruit, for therein lies all manner of misfortune, and the end is death.

Women, as harmless as doves, as we all know, are not always as wise as serpents.

They must repose in their own natural strength. They have little to hope for from men, as we wander in a promiscuous throng along the mighty thoroughfare which, to half the world, is a blind passage.

There is no danger that the sex will become too circumspect, but the tendency is to become unconsciously too lax.

Upon their knowledge and firmness alone will the arts and possessions of men be shattered. When young women fail in this wisdom of self-preservation, the same shroud enwraps them by the thousand which has fallen to this unhappy one at Mead's."

This is a torch of warning in very truth. Yours is a noble work. Help to lift it to a higher plane among the employments of women. Sincerely, Your AUNT.

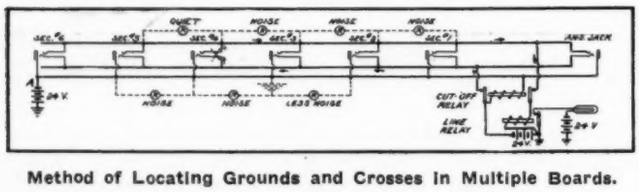
Test Set for Locating Trouble in Switchboard Multiple.

In an exchange where there are many multiple jacks, some means must be devised for locating grounds and crosses in the multiple cable.

An open is a simple trouble to locate and requires no explanation. A ground or a cross on any of the conductors of a line is a simple trouble, providing the conductors are readily accessible, and may be opened for a test. In case of a multiple board with an equipment of 5,000 or more lines, where jacks of the same number appear in a number of sections, it is not a simple matter to raise the multiple and open the conductor in each section. It also would not be good judgment, as the continual raising of the multiple would in time cause a large amount of trouble. Hence the following method is made use of in locating grounds and crosses.

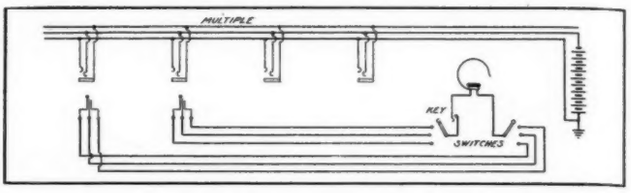
For instance, suppose the tip and ring conductors of a line are crossed in the multiple of a board. As the ring conductor is supplied with current from the main battery through the contacts of the cut-off relay, and the tip conductor is grounded through other contacts of the same relay, a current will flow over the ring conductor to the cross, through it to the tip conductor and thence to ground, as indicated by arrows in the sketch.

Now if connection is made to the ring conductor, by means of two switchboard cords, one in the first section and the other in the second section, and a receiver inserted so that it is in parallel with the conductor of the line under test, a click will be heard in the receiver. This is due to the current in the ring conductor dividing, and part passing through the receiver. Testing along the board from section to section, 1 to 2, the click would be obtained and the same condition would be found in sections 3 to 4. But testing from section 4 to section 5, would not cause a click in the receiver, as no current is passing through the conductor connecting these sections. Therefore, the trouble must be in the preceding section, which is section 4.



Method of Locating Grounds and Crosses in Multiple Boards.

Grounds are located in the same manner. With a ground on the sleeve conductor, it is necessary to furnish battery at some point of the switchboard as at *A*, section 6. Then testing along the board from section 5 to section 4, and from 4 to 3, the click or noise would be heard in the receiver, and from 3 to 2 there would be a click due to the ground on the sleeve through the winding of the cut-off relay. It would, however, be much weaker than the noise in the preceding sections. Hence the point at which the change in the noise is discovered, is the point nearest the trouble and in this case, is in section 3.



Test Set for Locating Grounds and Crosses.

New York. Edward C. Hobcroft.

Telephone Pole Becomes an Ornament.

There is nothing more unsightly than a telephone pole planted directly in front of one's home, but in California it need not remain so. The accompanying photograph shows how a pole became an ornament to the little home in the background. In the mild California climate, vines grow like weeds and so rapidly that with little or no care, the one in the picture covered the telephone pole within a few months. The pole now adds to instead of detracting from the pleasing effect of the little bungalow. It will be noted that the vine is kept at a safe distance from the wires.

A Vine Covered Pole in California.

Los Angeles, Cal. L. McCully Edholm.

Would Regulate Tree Trimming.

A law regulating the trimming of trees by telephone companies has been urged in a resolution adopted by the Iowa State Horticultural Society in convention at Des Moines.

Party Line Signaling and Harmonic Selective Ringing

Methods of Calling Subscribers on Party Lines Described in a Non-Techincal Manner by Article in Western Electric News—Harmonic Selective Ringing on Four-Party Lines—The Fundamental Principle Involved in System Now Extensively Used

Many different kinds of telephone service are offered to the public by the telephone companies. One of the important classifications is based on the number of parties that will have common use of the line. Private line service permits of the exclusive use of the line. Two-party line service permits of two subscribers being connected to the same line, which they must share in common. In a similar way, four-party line service means that four subscribers are connected to the same line. There is another class of service, which is commonly used in rural districts. It is known as "bridging" line service. In this system any number of subscribers from 5 to 25, or even 40, may be connected to the same line.

The value of the service to a subscriber depends upon the number of telephones connected to his line and, also, upon whether the calling of the subscriber by the operator is effected by means of "code ringing" or by means of "selective ringing."

The calling of a desired party on a bridging line is done by means of "code ringing." With this system, each subscriber is assigned a definite ringing code, consisting of a combination of long and short rings. Thus, when a certain subscriber on any line is desired, all of the bells on that line will be rung with his combination of long and short rings. Of

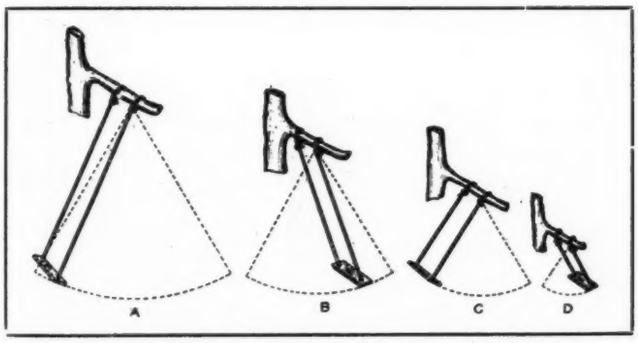


Fig. 1. The Longest Swing Vibrates the Slowest.

course, only the particular subscriber whose code of signals is rung should answer the telephone.

The calling of a desired party on a two- or four-party line is generally done by means of "selective ringing;" that is, only the bell of the desired subscriber will be rung and all other bells on the line will not be disturbed. There are several different kinds of "selective ringing" in use, but in this article we will only treat on one of the later types, known as "harmonic selective ringing."

In order better to understand the operation of this method of selective ringing, let us take the case of a four-party line where the subscribers on that line will be known as *A, B, C* and *D*.

The operator at the central office has available four different kinds of alternating current, which are obtained from four separate generators or vibrators. Any one of these four kinds of current can be sent out over any line as desired by the operator.

It will first be necessary to understand the meaning of the term "alternating current." An alternating current, as its name implies, is a current that surges, or alternates, in its direction when passing through a wire. We can see an analogy of this in the piston rod of a steam engine in motion. The piston rod alternates back and forth in its direction of travel.

While all of these four different currents above mentioned are of an alternating character, yet they differ from each other in that they alternate at a different rate. For example, one of them will alternate approximately 16 times a second; another 33; another 50; and another 66 times a second.

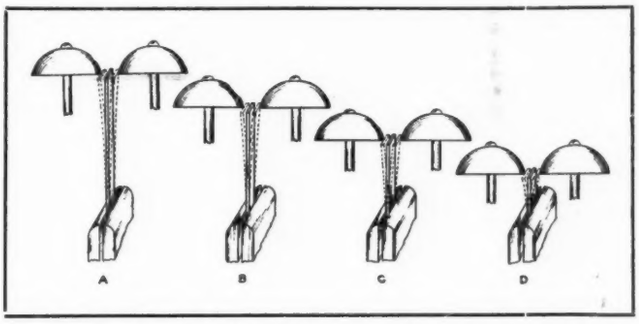


Fig. 2. Swing Principle Applied to Vibrating Steel Strips.

In each of the four telephones on the party line is located a ringer, or bell, that will respond to only one of these four kinds of current. Thus the ringer at party *A* will respond to the current that alternates 16 times a second and not to the other three kinds. In a similar way, each of the other three ringers will respond to its particular current only.

The fundamental principle on which these ringers operate is, that every pendulum and every vibrating reed as well, has a natural period of vibration, and can be made to swing or vibrate by the action of a succession of impulses occurring in the same frequency as that natural vibration period. To illustrate this principle let us take the case of a swing, which can be made to vibrate to and fro by the gentle push of the hands, if applied at proper intervals. Now, to make the analogy more complete, let us further assume that we have four swings, each with a different length of rope. It is a well-known fact that the shorter the rope, the faster will be the natural period of vibration. Thus we would have four swings that are capable of vibrating to and fro in different lengths of time, as illustrated in Fig. 1.

The proper frequency of impulses required to make any one of the swings vibrate is different from that required for any of the other three swings. Now, suppose that swing *A* requires an impulse every eight seconds and swing *D* every two seconds; it is apparent that if we applied the eight-second

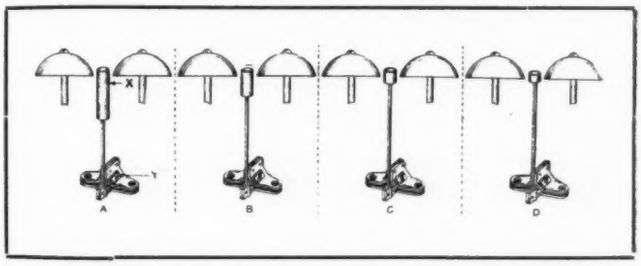


Fig. 3. Different Vibration Periods Secured by Varying Weights.

impulse to swing *D*, its vibration would practically die down from the effects of one impulse before the next was applied. Thus swing *D* could not be made to vibrate strongly from impulses that were just right for swing *A*. Likewise swings *B* and *C* could not be made to vibrate from those same impulses.

Another good illustration of this same principle is seen in the case of four strips of steel fastened in a vise, each having either a different length or a different weight, as shown in Fig. 2.

They would each have a different period of vibration, the same as the swings above mentioned. The frequency of impulses that would cause one bar to vibrate would not cause the others to vibrate freely. If we placed bell gongs near the ends of each of these vibrating strips of steel, as shown, we would have mechanical ringers, each of which would respond to a certain frequency of vibration but not to any other frequency.

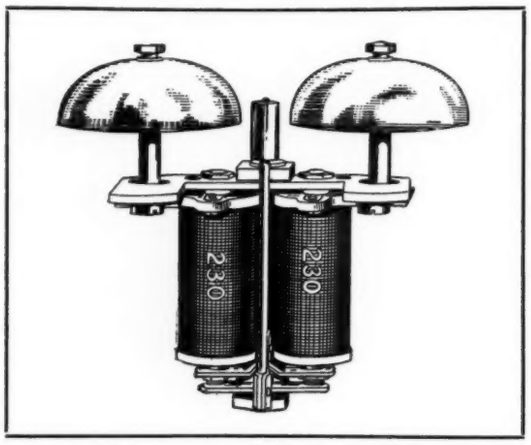


Fig. 4. The Complete Harmonic Ringer.

Fig. 3 shows the actual vibrating reeds of four harmonic ringers.

In this case the length of the four different reeds is the same, but the different periods of vibration are secured by varying the weight at the top, *x*, of the reed and, also, by varying the strength of the steel spring at the bottom, *y*, of the reed. By the addition of an electromagnet we have a complete harmonic ringer, as shown in Fig. 4.

Oregon Workmen's Compensation Act.

Fifty members of the Portland Section of the National Electric Light Association met recently to discuss the proposed workmen's compensation act, which will be submitted to the Oregon Legislature early in January, says the Electrical World. The proposed act, which was prepared by a committee appointed by Governor West, consisting of representatives from labor organizations, employers and the state grange, provides for an industrial insurance commission and a state industrial insurance fund. The state of Washington already provides industrial insurance by means of a law some of the more important features of which are that every company which has employes engaged in hazardous occupations is compelled to act under its provisions and that the payments made by the companies vary in percentage according to the risks incurred by the employes.

The proposed Oregon law differs very materially from the Washington statute, and from present indications it seems highly probable that it will pass the legislature in substantially its present form. Unlike the Washington law, it will not be compulsory, and companies and their employes may elect to take advantage of its provisions if they so desire, but if the employer does not elect to take advantage of the provisions of the law he loses the common-law defenses he may have previously enjoyed, such as contributary negligence, fellow-servant rule, etc., and hence it is believed that practically all employers and employes will come under the provision of the proposed statute.

The Oregon law calls for the flat payment of an amount equal to 3 per cent. of the company's payroll. In addition to this the workman is required to pay an amount equal to one-half of 1 per cent. of his wages and the state of Oregon is required to make a contribution equal to that made by the workmen, so that the net result is that the payments will amount to 4 per cent. of the payroll. The fund will be handled by a commission of three, appointed by the governor.

It has been the experience in Washington that the payments made by the commission in that state have been rather small, and the Oregon committee has arbitrarily increased the size of the payments to be made under the Oregon law.

Tri-State Club Starts Second Year Right.

The Tri-State Telephone Technical and Social Club held its first annual meeting recently at the club rooms in the general offices of the Tri-State Telephone & Telegraph Co., at Merriam Park, St. Paul, Minn. The following officers were elected for the ensuing year: W. T. Larsen, St. Paul, president; Walter Roll, Minneapolis, vice-president; J. A. Beckstrom, St. Paul, secretary; T. E. Macoubrey, St. Paul, treasurer. J. J. Stafford, Minneapolis, and C. W. Clasen, St. Paul, were appointed members of the executive committee.

Following the business meeting, W. S. Williams, St. Paul manager, read a paper, "Co-operation of the Employes as an Asset to the Company." Songs by a male quartet, piano selections, a smoker and luncheon completed the program.

On Friday, December 13, the club members demonstrated that superstition was a negligible quantity among the male employes of the Tri-State Telephone & Telegraph Co. The attendance at this meeting taxed the capacity of the large club room to the limit.

The first of a series of illustrated lectures on "Outside Construction" was given by W. X. Jones, superintendent of construction, long distance department. This lecture covered the proper methods for gaining and roofing poles, digging holes, setting poles, grading the pole line and different methods of anchoring. This subject will be continued in a lecture by Oscar Knell, superintendent of equipment and maintenance, long distance department, at the next meeting, January 3, 1913.

It has been planned to cover, in a non-technical manner, the entire field of the telephone business in this series of lectures, so that the subjects treated will be fully comprehended by the members from the commercial departments as well as the electrical.

The subjects treated are open for discussion after the lectures, so that any point on which additional information is desired, or any difference of opinion that may arise, may be fully covered.

The lecture was followed by a smoker and luncheon, served with the compliments of the company, during which the members gave vent to their feelings in song, clog-dancing, etc. "It was fortunate indeed for the company," says Secretary Beckstrom, "that there were no agents of the Metropolitan Grand Opera Co. within hearing, otherwise the Tri-State might now be minus some otherwise capable 'trouble shooters.'"

If the success of the first two meetings of the season is any criterion of what is to follow, the success of the club both from the employes' and the company's standpoint will be enviable. The club will give a dance January 10.

Nebraska Telephone Co. to Issue Bonds.

The Nebraska Telephone Co. has applied to the state Railroad Commission for permission to issue $1,313,000 refunding bonds.

The "Going Value" of a Public Utility Corporation

Discussion of Elements Entering Into an Important Factor in Regulation of Rates of Public Service Companies by State Commissions—Paper Read Before Western Society of Engineers and Published in Proceedings—Third Installment

By Frank F. Fowle

Applications of the Plan.

This method was used very recently in the report on water rates made to the mayor and the city council of Peoria, Ill., by Mr. Benezette and C. B. Williams. The value of the physical property of the Peoria Water Works Co., on January 1, 1909, as measured by the estimated cost of reproduction, was $1,950,000, and the estimated going value was $865,096, or 44.3 per cent. of the physical value. The estimated period of recovery was 20 years. Generally speaking, the going value will increase with longer periods of recovery, a point which may be noted in connection with the rather large proportion of going value in this instance.

The same general method was considered also in the report on gas rates made to the Chicago council committee on gas, oil and electric light, by William J. Hagenah, but the value thus found was not accepted for rate making purposes. The present investment value of the property, assumed for the purpose of calculation, was as follows:

Physical value	$42,000,000
Working capital	4,000,000
Going value	12,800,000
Investment value	$58,800,000

Assuming a recovery period of 10 years, the present worth of the going value was estimated to be $12,935,000, or nearly the value assumed in the first place. The investment value was taken into consideration only for the purpose of allowing proper credits for interest on the uninvested capital during the reconstruction period. This appears to be a refinement not taken into account in earlier applications of the theory, and it tends to reduce the final going value because it recognizes a possible source of extra income during recovery.

This method has been reviewed in several Wisconsin utility cases, first appearing in the *Cashton case. This last prominent case in which it was placed in evidence is the †Beloit case; there the going value claimed was as follows:

Water dept.	$ 63,996
Gas dept.	63,261
Electric dept.	46,473
Total	$173,730

The total reproduction cost of all physical property was $894,204. It was assumed that the ratio of the rate of acquiring new business in the recovery period to the rate of acquiring the original or actual business would be double for the water department and triple for the gas and electric departments. In deciding the Beloit case the commission quoted as follows from the ‡Madison case.

"The connected load or business is, of course, of value, but it appears to us that this value is covered by the cost of establishing the connections and acquiring the business, which costs, in one form or another, have found their way into the accounts of the company, and thereafter constitute a part of the facts that are taken into consideration in appraising the plants.

Possibly future growth of the business can hardly be legitimately capitalized by utilities which are not entitled to more than reasonable returns on their investment; and this is also true of the right to do business in a particular city which rights have been granted free of cost."

This reproduction of net-earnings method has never, so far as the author is informed, received the sanction or endorsement of the Wisconsin commission. But the fact that it has been accepted in other cases entitles it to our serious consideration. Thus opinions differ as to whether it measures an element of value which is admissible in appraisals for transfer or ownership or for rate making.

It can be said in the first place that it measures no element of direct cost in building up a going business, and it bears no relation to the past profits, or the losses; and in fact there may be a going value, under this theory, in an unprofitable business. What the method really does determine seems to be this: It estimates the loss of income which would result if the present service contracts and connections were suddenly wiped out, along with the physical plant, and then reestablished as fast as possible after the completion of the duplicate plant, assuming that the public appreciation of and demand for the service proceeds as though there had been no change. But such a loss of income tells us neither the actual outlay or investment for building up the original business, or the reproduced business, and hence it seems to be not in keeping with the cost of service theory.

As Going Business Earns Fair Rate.

It is still a fair question, at least under the value of service theory, whether this method establishes a parcel of value which is quite independent of all the other elements of value which are ordinarily present. Granting now that a physical property has a value equal to its reproduction cost, what establishes that value? Surely not the mere act or appraisal or the statement of a theory of rates. It seems very evident that the value by virtue of the fact that the property as a going business will earn a fair rate of return on the cost. This is supported by the fact that appraisals are usually made under the assumption that the component parts of the plant are useful in their existing locations, in coordinate relations with each other, for an indefinite future period or until they wear out. Were this not so, the physical property could not be assigned a value equal to its structural cost, but instead it would have to be considered as a group of separate parts which would be thrown on the market and sold for what they would bring; this value, especially in the case of machinery and equipment, would be much less than the present value found by deducting depreciation from the reproduction cost.

Thus a new plant with no business has a value much less than its structural cost, except as regards the expectancy of future earnings. Undeniably a plant with connected consumers and a going business is worth more than one without business, but the one without business is worth less than its present physical value, or reproduction cost minus depreciation. It seems perfectly clear that the cost value is established by an amount of net earnings equal to a fair return. If then the net earnings give rise

*3 W. R. C. R. 85-96.
†7 W. R. C. R. 187.
‡4 W. R. C. R. 501, 578.

to a physical value equal to the cost, is it equitable to consider them a second time as having a reproduction value, quite apart from the physical plant? That is to say, do the earnings have an intrinsic value over and above the value which they confer on the tangible property, where such property value does not exceed the cost? It would seem not, and yet the reproduction of net earnings theory seeks to establish this very proposition. Apparently this is like trying to eat your cake and have it, at the same time, because earnings which establish a value on the tangible property equal to the cost, and no more, cannot equitably be considered to establish simultaneously some additional value. Of course if any intangible or going value is admitted at the start, it will appear in the final result, but that proves nothing.

If the net earnings are no more than a reasonable return on the reproduction cost of the tangible property, the application of this theory of going value will nevertheless produce an extra increment of value, which will then justify additional net earnings, and by a second application of the theory the value will be increased still more, and then in turn the net earnings,—and so on without limit. Considered from this point of view, the theory reduces itself to an absurdity.

One of the minor objections to the theory is contained in the fact that the present plant, if fully reproduced in the shortest possible time, will be somewhat too large during the first few years of recovery. This seems to be recognized in the presentation of the method in the report on Chicago gas rates previously mentioned, but so far as the author is informed this is the first instance. Another objection is the large element of uncertainty in speculating on the probable period of recovery, which materially affects the gross amount of the going value.

It is always a safe test of any theory of going value to inquire whether a prospective investor would recognize it and put his money into the value thus determined. If an engineer were asked by an investor to make a private report on some utility property, it is extremely improbable that he would apply this method of going value and submit it, along with the estimated tangible value, to his client. The measure of going value from the investor's view point is earning value, present or future, and nothing else.

The author's conclusion in regard to this method, after much study of it, is that it measures no element of value which can be considered under the cost of service theory of rates. It might be admissible, however, under the value of service theory, where cost is not a primary consideration.

The Capitalized Losses Method.

It is well known that many public service companies failed to earn a reasonable return during their early existence, particularly those which commenced business many years ago. These companies are now reaching the period when their present and future returns will be regulated in accordance with the cost of service theory. This raises a question of equity, because the pioneers who have failed, up to this time, to recoup their early losses from later profits, are now denied the opportunity to recoup themselves in the future. On the face of it, this would seem to be unjust, and consequently there has been a tendency to hold that a public utility is rightly entitled to a fair return on its tangible property, from the day it commenced operation down to the present moment. If in fact there were such early losses, they would now be capitalized, with interest, under this policy, and included in the value upon which reasonable returns ought now to be computed.

This, in short, is the plan which has been approved by the Wisconsin commission, under the name of "going value." The selection of the name for this increment of value is not a particularly happy one, because it is not going value in the usual sense, but rather the capitalized value of deferred profits. In the *Madison case the commission said:

"For public utilities which, under both the common law and the statute law, under normal conditions are only entitled to reasonable returns on the investment, justice as well as equity appears to demand that the amounts, if any, by which they, under ordinary conditions, have failed to earn such returns, should be considered in fixing values and rates for such plants."

In the decision of the ‡Beloit case the commission quoted the foregoing, and then added the following:

"The early losses or deficits, or the amounts by which the earnings of the plant have failed to meet the ordinary operating expenses and taxes, and provide for depreciation and reasonable return on the investment, will closely measure in most cases, the cost of developing the business."

Now it is important to study the effect of this policy if pursued without the greatest care. Evidently the business which prospered least will now be entitled to the largest deferred profits or going value, and thus there may be some tendency to place a premium on mismanagement or bad business judgment. On this point the commission said in the †Madison case:

"By this is not meant, however, that deficits from operation can be equitably taken into account in the appraisals or rates regardless of the conditions under which they were incurred. As already stated, when such deficits are due to abnormal conditions, or when due to bad management, defective judgment, extravagance, lack of ordinary care and foresight, unduly high capital charges, and other causes of this nature, it is manifestly clear that they should be accorded little or no consideration in either the valuation or the rates."

In other words, the local circumstances in each case govern to a large extent. The next point which ought to receive consideration is whether, in now capitalizing deferred profits, the pioneers or actual losers will receive the equity which it is sought to establish. For example, they may have passed away, or they may have sold their securities, or the entire property may have been through reorganizations or receiverships, or it may have been merged with other properties and the old securities exchanged for those of the consolidated system. The Wisconsin commission said of this aspect of the matter in the †Madison case:

"This is also likely to be the case for such deficits which were incurred under and borne by others than the present owners, and which have been wiped out in the various transfers of ownership. That these propositions are, as a rule, sound and equitable, appears to be so clear as to need no further argument."

Hence it is evident that this principle must be applied with great care to see that no injustice is done either way. Various examples of its use may be found in Wisconsin utility cases; the following illustration is taken from the ‡Beloit case, for the whole utility, including the water, gas and electric departments. (Fig. 3). This computation does not antedate 1906, when a consolidation of three independent utilities took place, to form the present system.

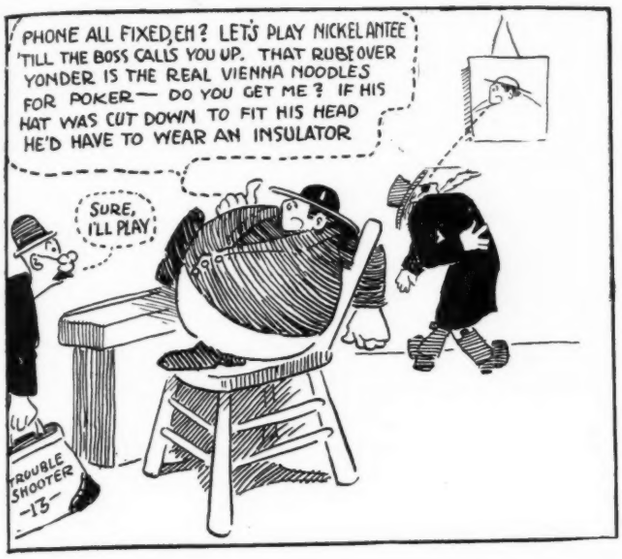
The reproduction cost of the property on June 30, 1910, less the additions since the consolidation early in 1906,

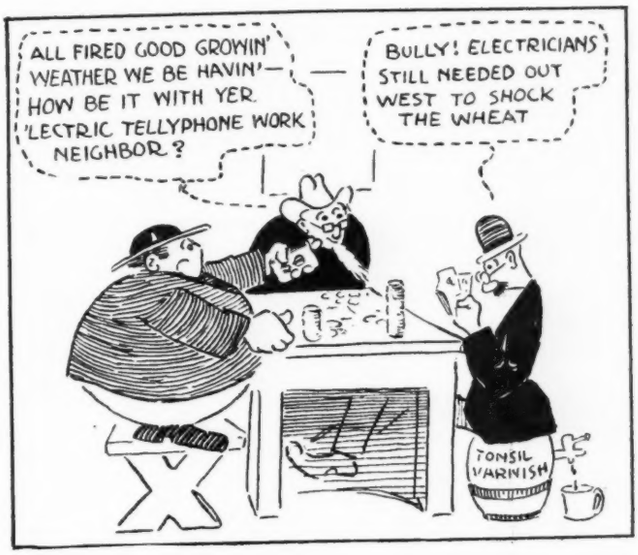
*4 W. R. C. R. 501,585.
‡7 W. R. C. R. 277, 280.
†4 W. R. C. R. 501, 585, 586.

(Continued on page 983.)

Alfalfa Granger Continues to Get City Polish

Words and Music by W. L. Capple


PHONE ALL FIXED, EH? LET'S PLAY NICKEL ANTEE 'TILL THE BOSS CALLS YOU UP. THAT RUBE OVER YONDER IS THE REAL VIENNA NOODLES FOR POKER— DO YOU GET ME? IF HIS HAT WAS CUT DOWN TO FIT HIS HEAD HE'D HAVE TO WEAR AN INSULATOR
SURE, I'LL PLAY
TROUBLE SHOOTER -13-


ALL FIRED GOOD GROWIN' WEATHER WE BE HAVIN'— HOW BE IT WITH YER 'LECTRIC TELLYPHONE WORK NEIGHBOR?
BULLY! ELECTRICIANS STILL NEEDED OUT WEST TO SHOCK THE WHEAT
TONSIL VARNISH

THOUGHT
CROOKED GALOOT
TELEPATHIC THOUGHT
I WOULDN'T UP AN' CALL HIM CROOKED 'ZACTLY THO IF WE SHOOK HANDS I REKON I'D COUNT MY FINGERS

BE SPORTS MERRY GENTLEMEN GOOD CARDS NEVER COME THE FIRST TWENTY-FOUR HOURS— YOUR LUCK'S SPLENDID, JUST CONSIDER THE ONE-LEGGED LINEMAN WITH BUNIONS
THEIRS

Out of the Mail Bag

The next issue of TELEPHONY will be the first to bear the date 1913, so we take this opportunity to extend to all our readers the compliments of the season and wish them a happy and prosperous New Year. TELEPHONY enters upon its thirteenth year, the first number of the paper having appeared Jan. 1, 1901, and hopes to be able to serve its patrons more fully and efficiently during the coming twelve months than ever before. The publishers believe that this paper has been a valuable help to the telephone men of the country, and no one, we think, will accuse us of undue vanity in holding that belief. At least we hope not, for there is a feeling of contentment and gratification that comes from the thought of *work well done* which is to be gained in no other way. On the other hand, TELEPHONY acknowledges its obligation to as loyal and helpful an army of subscribers and advertisers as ever supported a trade publication. No day passes without the receipt of a letter from some one thanking TELEPHONY for its efforts to serve its constituents. It may be from a lineman or a trouble shooter who has obtained information which helped him to solve a knotty problem in his work, or it may come from the manager of an exchange who has profited by reading an article which threw a new and needed light on a subject that appealed particularly to him. Again, it may come from an advertiser expressing satisfaction with the service he is receiving. These expressions come from all parts of the country, and, needless to say, they make the going easier, encourage the publishers and editors and put new enthusiasm into their hearts.

Telephony Helps This Entire Organization.

Here's the kind of a letter TELEPHONY likes to receive. It is from a lineman in the employ of a telephone company in Kansas, and the reason that the name of the writer is withheld is obvious in reading the communication. It would be a shame to let the company know that their new manager was not born with the ability and training to fulfil his new duties. Anyhow, TELEPHONY is immensely pleased to know that it has assisted a subscriber to win a promotion. The letter follows:

"Enclosed find postoffice order for which please send me your valuable journal another year. Last year TELEPHONY netted me $57.00, or nearly $5.00 a month on my salary. I was asked the other day if I would accept the position of manager. Of course I said 'Yes.' They think I am naturally inclined as a telephone man, but old TELEPHONY knows."

The concluding sentence may be a little blind, but we construe it to mean that the writer owes most of his knowledge of the telephone business to a faithful reading of TELEPHONY. The incident also shows how an intelligent application of the information thereby gained will enable a man to improve his position.

Under date of Dec. 17, Theodore Gary, of Macon, Mo., head of the Gary telephone system, writes to the editor:

"I intended to speak to you the other day about the splendid improvement in TELEPHONY. It seems to me you are doing yourself prouder and prouder all the time. The addition of Mr. Kaufman, I think, will prove of great value to you. I just wanted to say this word as I think it is due you. With kind personal regards and with the compliments of the season."

R. B. Babbington, general manager of the Piedmont Telephone & Telegraph Company, at Gastonia, N. C., in a letter to TELEPHONY, adds this kindly message: "I want to say that I have been a subscriber since the establishment of your paper and have never missed a single issue. It goes without saying that your magazine has a warm place in my estimation and appreciation, and has been of very valuable assistance to me a great many times. I wish you the compliments of the season and a continued period of success and usefulness in the telephone field."

Harley Hitzeman, manager of the Harlan (Ind.) Telephone Company, in an interesting letter speaks of a unique way to utilize TELEPHONY. "I wish," he writes, "to thank you for the information received about cleaning up trouble caused by a leaf, as it was the first I ever had of that nature. I always enjoy your paper and find points in it that are of great benefit to me and my helpers. I think all linemen should receive TELEPHONY. I also find it helps subscribers to report trouble correctly, which I consider another great advantage. As soon as I read my paper there is always some one of my subscribers after it, and I find it does me good in more ways than one."

Mr. Hitzeman undoubtedly is an enterprising manager, as he circulates TELEPHONY among his subscribers, enabling them to report trouble correctly, and facilitating his own work. It is a new wrinkle in the game, and also argues that TELEPHONY is interesting and instructive to others outside of the field.

The accompanying photograph shows the staff of the Harlan company. From left to right in the front row are: William Zimmerman and Donald Bostow, linemen; G. A. Reeder, president; J. H. Zimmerman, treasurer; Manager Hitzeman; from left to right in the back row are: Edith Walters, Lois Wilson, Helen Reichelaaffer and Minnie Westerman, operators. Manager Hitzeman bears witness to the faithfulness of his staff by the statement that Miss Walters and Miss Reichelaaffer have not missed a day from duty in four years and that Miss Wilson has not been absent for three years. "We are giving good service and making money for the company," he adds in conclusion.

Alph. Hoover, president of the Home Telephone Company at Green River, Ontario, Canada, in a letter enclosing his check for his 1913 subscription, says: "I am sure I would be very much lost in the telephone business were it not for the splendid articles which appear in TELEPHONY."

In writing in to advise of a change in his address J. E. Green, of Grinnell, Ia., adds: "I can't get along without TELEPHONY."

TELEPHONY's financial editor has received the following letter from Manford Savage, of Champaign, Ill., president of the National Independent Telephone Association:

"My Dear Mr. Kelsey: I want to congratulate you upon your very admirable article in the issue of TELEPHONY

November 16 on 'The Bemis Report.' It is not only a clear statement of the facts that apply to the Chicago Telephone Company, but a novel and forceful presentation of many things that appeal to every broad-minded man connected in any way with a public service corporation."

In a letter received by Mr. Kelsey, J. M. Bell, of York, Neb., says: "I do not know of any department in TELEPHONY that is more *educative* than is yours. I hope, therefore, that you will not 'weary in well doing,' but continue your 'pro bono publico' work for many years, for the Independent telephone people need considerable education along the lines of good practice, while telephone users still seem to cherish the delusion that the income of a telephone company is substantially all profit."

"Why don't you print some more of the 'Letters from an Old-Timer to the New Trouble Man'?" asks a subscriber in a letter signed F. B. "I found them very interesting and useful, as I have recently been shooting trouble, and have gained many good ideas from the 'Old-Timer's' suggestions. I read the Dobbs article about 'The Inspector and the Troubleman' also and enjoy them, but wish you would print some more of the 'Old-Timer's' contributions."

TELEPHONY published a number of the 'Old-Timer' letters in September and October, as contributed by Fred Dewey, and has endeavored to obtain some more from him, but unfortunately—at least for TELEPHONY—Mr. Dewey, who is associated with Stewart Bros. of Ottawa, Ill., has been so busy of late that he has been unable to do any writing. Later, it is hoped, he will be able to resume his interesting contributions on testing and trouble shooting.

W. S. Daniel, secretary-treasurer of the Winano Telephone Company, at Knox, Ind., in a recent letter, says: "I enjoy and receive benefit from reading articles from your subscribers, and will contribute my mite."

TELEPHONY is always glad to receive practical letters from its subscribers, and hopes others will follow Mr. Daniel's example.

We all know that it is possible to have "too much of a good thing." Here is an instance: C. F. Goodrich, of the Antelope Valley Telephone Co., of Lancaster, California, writes in: "TELEPHONY is worth the price all right, but I do not have time to read it. I think it was a better journal at $1.00 than today at $3.00." There isn't a doubt that the old monthly TELEPHONY was a bonanza at the price of a dollar a year, but if it were being published in that form now the price would be considerably higher. Most monthly periodicals have increased their price in the last five years. Popular magazines have been raised from $1.00 a year to $1.50 and $2. It is a part of what is called the "i. c. o. l.," meaning the "increased cost of living." But, as Mr. Goodrich concedes the present TELEPHONY is worth its price, which will be generally admitted when it is remembered that it is published four times a month instead of only once, when it sold at the lower rate.

R. C. Smith, secretary-treasurer of the Calhoun County Telephone Company, at Homer, Mich., in a letter to the editor, says: "I have just finished reading V. H. Dake's article on cable testing. I wish to thank TELEPHONY as well as Mr. Dake for the valuable information furnished. We are in a position where we occasionally have to clear cable trouble and are rarely able to secure the services of an experienced cable man. Mr. Dake's article fits an immediate need."

C. A. Prim, secretary and treasurer of the Bonifay Telephone Company, Bonifay, Fla., in a letter to TELEPHONY, says: "I like to read your magazine. It is brim full of interesting matter. I like the way you are helping the Independent people in the telephone field. With best wishes for your success."

"TELEPHONY is the best telephone journal published, without any exception," says H. E. Mellor, of Stanley, N. Dak.

Writing from Galesburg, Ill., H. T. Moslin says: "I cannot get along without your paper. It is worth $500 a year to me."

In sending in his remittance renewing his subscription to TELEPHONY, C. E. Dutelle, of Proctor, Vt., writes: "I like TELEPHONY very much. There are some very good and helpful articles in it."

"This check may look good to you, as does TELEPHONY to me. Yours for another prosperous year," writes Charles E. Guernsey, manager of the Eden Mutual Telephone Company, of Schaller, Ia. Mr. Guernsey's kind wishes not only look good but sound friendly, and TELEPHONY wishes him and his company a prosperous year in 1913.

John W. Coffey, the indefatigable "Coffee system" man of Indianapolis, writes from Warren, Ill., where he has been at work on a contract: "Business is increasing and the prospects are good for the new year. I trust the same is true of TELEPHONY."

"Your paper has many articles on railway telephony that are very interesting and instructive," writes W. D. Cleveland, of Portland, Ore.

In a letter enclosing his check for renewal of his subscription to TELEPHONY, H. E. Ganung, of Arkville, N. Y., says: "Your paper is worth its price to any one interested in the telephone business."

"You bet your life I read TELEPHONY," writes Philip Yund, of Benton Harbor, Mich., in a letter enclosing his subscription check. "I couldn't get along without it."

Timothy Halleman, of the Springfield Rural Lines, Springfield, S. Dak., writes: "We couldn't get along without TELEPHONY, and are sending postoffice order to pay for two years."

From Republic, Mo., O. L. Fulbright & Co., dealers in telephones and electrical supplies, writes: "Enclosed please find check for TELEPHONY. We find Mr. Kelsey's articles very interesting. Indeed, so much so that we have lately acquired the habit of looking for his article the first thing on receipt of the paper."

"I thank you very much for sending me the missing issues, as I surely would have been sorry to not have every number," writes Carl Dyvig, manager of the Inwood (Ia.) Telephone Company. "Best regards to Kelsey. His articles are the first I read."

J. F. Hoover, manager of the Star City (Ind.) Telephone Company, in remitting for TELEPHONY for the coming year, says: "I think your paper is the best published for telephone men."

"Enclosed please find check in payment of my subscription to TELEPHONY for 1913," writes J. E. Mallory, manager of the Wellsville Co-operative Telephone Association, of Wellsville, Kan. "TELEPHONY the past year has been better than ever, and is well worth the money. Yours for a better year for 1913."

In sending in his remittance, R. E. Moore, Olney, Ill., says: "Thanks for your courtesies. We would dislike to be without your paper."

Charles D. Shea, superintendent of the telephone department of the city of Brookings, S. D., in a letter renewing his subscription, says: "I want to thank you for sending TELEPHONY and I want it another year. I wouldn't be without it."

E. M. Dumas, Big Springs, Texas, wire chief of the Western Telephone Company, in a letter renewing his subscription to TELEPHONY, says: "I find a great deal of good, useful reading in your paper. Be sure and keep it coming."

Under date of Dec. 7, J. Pritchard, who operates a system of telephone exchanges in the Hawaiian Islands, sends a letter enclosing his remittance for his 1913 TELEPHONY subscription, in which he says: "I suppose you are having the usual cold weather back in 'the States' while we are

having fine warm weather—70 in the shade today. Wishing you a Merry Christmas."

"I am sending you my subscription for another year," writes Byron Ables, of the Reading (Mich.) Telephone Company. "You can tell your Mr. J. C. Kelsey for me that I think his articles in your paper one of the best and that his ideas are O. K. I think when anybody tries to dispute with him, they will have to go some. I thank you for past favors."

In sending in his subscription for 1913 John B. Harker, of Milton, Wis., adds: "I do not feel as if I can be without your valuable paper."

C. H. McKinney, of Flaffstaff, Arizona, under date of December 19, writes: "There is no periodical that I enjoy more than TELEPHONY."

"We are greatly enjoying each week's copy of TELEPHONY," writes Robert J. Cole, editor of the Baltimore & Ohio Employes' Magazine. "Though our subjects are mostly on railroads we find suggestions worth noting and the working out of principles in your field which have an equal application in ours."

Damage from High Voltage Wires.

The appellate court, at Indianapolis, has reversed the Adams circuit court in the suit of the Citizens' Telephone Co. against the Ft. Wayne & Springfield Railway Co. for damages caused by induction from the high voltage power transmission leads of the latter company which parallel the telephone company's wires for some distance.

The complaint in the action was in three paragraphs. A demurrer was filed to the first two paragraphs, while the trial court sustained the demurrer to all three paragraphs, and the telephone company appealed. The appellate court considers the two paragraphs to which the demurrers were filed and says they did not show a cause of action, but takes up the question of the control of high voltage electricity, and holds that, if negligence in its transmission is shown, and that it thereby injures a telephone company, the railroad would be responsible for damages. The court says that the inclination of the present decisions is to require persons to operate their own business without unnecessarily interfering with or damaging the business or property of another.

Railway Telephony—Practical Points in All Branches

Value of Tabulated Record of Telephone Troubles—Large Percentage Due to Poor Connections—Carelessness of Workmen—Discussion of Proper and Improper Methods of Making and Soldering Joints —Some Common Sources of Trouble — The Remedy

Troublesome Connections on Telephone Circuits.

By J. A. Kick.

A carefully tabulated record of telephone troubles would clearly demonstrate the fact that a very large percentage of telephone troubles are traceable to poor connections. Further investigation would definitely place the

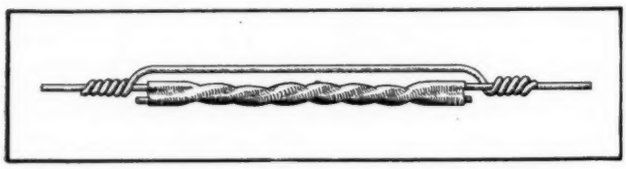


Fig. 1. Close Turns Give Poor Soldering Connections.

cause for a large percentage of these poor connections, on the carelessness of installers and maintainers.

Haste and but little care in making a sleeve and soldered connections in the line wire produces a condition which in time becomes troublesome. One such case may be located with little difficulty, although it may be in any one of a considerable number of connections between two stations. Should the trouble be due to the cumulative effect of a number of these connections distributed over the circuit, the locating and clearing will be found to be a considerable task. Construction specifications call for a certain number of turns for each kind of copper sleeve, and to linemen's failure to comply with these specifications is due some cases of loose connections in the line wire. More often the trouble is due to indifferent work in soldered connections at terminal pins and elsewhere.

Upon pairing a new copper wire with an old one, in which the joints had been bridged and soldered, a very noisy circuit was found. When investigated, it was discovered that all joints had been bridged but in soldering the bridging wires, many loose connections had been left. The bridges were made as shown in Fig. 1. That is, the bridging wire was wound around the line wire in a closed coil and the solder applied to the outside of the coil. This resulted in all the solder on the bridging wire being held on the outside, so that none reached the line wire. There were therefore loose connections between the bridging and the line wires. The proper method of connecting the bridging wire is shown in Fig. 2. By leaving plenty of surface of the line wire, between the turns of the bridging wire, solder will take hold of both wires equally well and a good joint will be made.

In soldering drop wires to the line wires the same care should be taken and the joint made practically the same as shown at one end of the sleeve in Fig. 2.

In depots, towers and other buildings adjacent to railway tracks, a constant trouble is experienced due to vibration causing loose connections at points where the wires terminate under screws and on binding posts. Wherever possible soldered connections should be used or else the wires terminated under some form of the various lock-nut connections.

Dry battery screw terminals are the source of much trouble and some form of spring contact such as the Fahnestock clip is preferable.

Of the troubles most disastrous to a wire chief's good record is an elusive intermittent swing to cross or ground. Worst of all is the same character of a loose connection

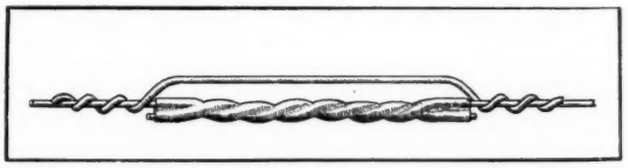


Fig. 2. Spaced Turns Allow Solder To Reach Inner Wire.

which evades every effort to locate, and produces silver threads among the gold.

The best way to minimize the troubles outlined is careful construction and regular, efficient inspection by men who will see that conditions which make for operating troubles are eliminated.

FOWLE ON GOING VALUE.

(*Continued from page* 978.)

was $474,251. The methods of computing the value of the property at the end of each year is revealed in the following formula:

$$V_2 = V_1 + (D + I - R) \quad (1)$$

$$V_0 = \frac{V_1 + V_2}{2} \quad (2)$$

Thus the value at the end of the year equals the value on the first of the year, plus the additions during the year

Year.	Plant Value at first of year. V_1	Plant Additions during year. A.	Depreciation. 2.35 % D.	Interest and Profit. I.	Net Earnings. R.	Plant Value at end of year. V_2	Average Value for the year. V_0
1906	$474,251	$ 46,752	$11,094	$34,634	$49,464	$518,067	$497,627
1907	518,067	226,825	14,909	44,204	58,475	745,530	631,479
1908	745,530	74,543	18,450	54,796	66,549	826,769	782,801
1909	826,769	33,806	9,861	29,528	39,517	860,447	843,672
1910	860,447	38,027	20,567	61,502	83,127	897,476	879,460

*First six months, to June 30th.

Fig. 3. Computation of Earning Value.

and plus the deficit from operation, if any, or minus the surplus. The total earning value on June 30, 1910, on a 7 per cent. basis, was $897.476. The total physical value, or reproduction cost, on the same date, was $894,204, and the present or depreciated value was $815,902. The commission held that under the local circumstances the cost of reproduction is not far away from the value which the company is entitled to earn a reasonable return; this included working capital of about $15,000 and the value of considerable water power. In this case there was no depreciation reserve fund, but there should have been, however, a total reserve of about $80,000 at least. In the computation of earning value it may be interesting to note the yearly surpluses and deficits, as shown below:

	Surplus.	Deficit.
1906	$2,936	.....
1907	.....	$ 638
1908	.....	6,697
1909	128	.....
1910	998	.....
Total	$4,062	$7,335

A computation generally similar to that shown in Fig. 3 was employed in the report on Chicago gas rates, previously mentioned. Commencing with a property value of $39,000,000 in 1898, the final earning value in 1910 was shown to be $60,933,630. After adjusting this for certain later extensions and excluding certain property not employed in the gas utility, the earning value or amount upon which the report holds that reasonable returns ought to be computed is as follows, in round numbers:

Physical property, reproduction cost	$38,900,000
Working capital	3,200,000
Going value	9,400,000
Total earning or investment value	$51,600,000

Going value was present, however, in the original property value of $39,000,000 in 1898, which is a pertinent fact in connection with the going value of about $9,400,000 found to exist in 1910. The original value was made up as follows:

Physical property	$27,000,000
Working capital	2,000,000
Going value	10,000,000
Total	$39,000,000

The substantiation of the going value in 1898 will be taken up under the next method to be discussed. We can readily see that the method now under discussion might produce a very low earning or investment value, if the early losses were much more than offset by later profits. The question then arises, does the method work both ways? At first sight it would seem that it ought to, as a simple matter of injustice. There can be no question that the requittal of early losses by later profits is entirely equitable, but in case these profits should be so large as to entirely wipe out the losses and furthermore reduce the earning value to a point below the reproduction cost of the tangible property, the matter of equity needs further consideration.

(*To be continued.*)

Belvidere Brooks to be Western Union Vice-President.

Formal announcement will be made shortly by the Western Union Telegraph Co. of important changes in titles and authorities, to become effective Janury 1. The changes will include the advancement of Belvidere Brooks from the position of general manager to that of a vice-president, with headquarters in New York, in charge of commercial and public relations. Changes in titles will mark the abolition of the title of general superintendent of each of the principal geographic divisions of the company. The following changes are in connection with officials reporting to Mr. Brooks:

A. G. Saylor, from general superintendent to general manager of eastern division, with headquarters at New York; T. P. Cook, from general superintendent to general manager of western division, with headquarters at Chicago; W. J. Lloyd, from general superintendent to general manager of mountain division, with headquarters at Denver; C. H. Gaunt, from general superintendent to general manager of Pacific division, with headquarters at San Francisco; and H. C. Worthen, from general superintendent to general manager of southern division, with headquarters at Atlanta. The appointment of general manager of the Gulf division will be announced after January 1.

G. M. Yorke will be appointed general superintendent of plant, with headquarters in New York, and W. N. Fashbaugh, will be appointed general superintendent of traffic, also with headquarters in that city.

Would Collect Telephone Bond.

The Oakland, Cal., city attorney is to be instructed by the Oakland council to bring suit against the Home Telephone Co. of Alameda county, for the $100,000 bond filed by that corporation with the city at the time the council granted its franchise.

TO INDEPENDENT AND BELL COMPANIES.

In connection with the information we are now gathering for the forthcoming edition of TELEPHONY'S Directory of the Telephone Industry, we are compiling certain additional and unusual statistics. To the end that this data may be comprehensive and as complete as possible, we ask every telephone company to mail us a copy of its latest directory. We trust all will respond promptly, and assure each that the courtesy will be appreciated. Please address it to TELEPHONY, Monadnock Block, Chicago.

From Factory and Salesroom

Conventions: National Independent Telephone Assn., Chicago, February 18, 19, 20; South Dakota Assn., Sioux Falls, January 8, 9; Northwestern Cedarmen's Assn., Duluth, Minn., January 7, 8; Independent Telephone Men, Pittsburgh, Pa., January 16; Illinois Assn., Peoria, January 14, 15, 16.

"I rode in on a milk train the other day from one of the smaller towns outside of Chicago," said a well-known Chicago business man recently. "An incident occurred on that trip which impressed upon me strongly the rapid means of communication in railway service.

"We were out about five miles from town and were rolling along nicely when suddenly, after a series of jolts

Using the Portable Railway Set.

and jerks which brought everybody to their feet or knees, the train stopped.

"The window being open, I leaned out to see what we had struck. I saw the engineer and fireman climb down out of the cab and go forward to the front of the engine. The way they were prowling about and gesticulating, I could tell that something had broken down. By this time the conductor had joined them, and after a minute's con-

The Portable Railway Set.

sultation, I heard him yell to the brakeman to bring out the "portable." The "brakie" ducked inside, and in a minute appeared with a small square box and two or three poles about eight feet long. He joined the conductor beneath the telegraph wires, handed him the instrument, and unstrapping the poles, joined them together. Meantime the conductor had fastened the cord from the instrument to a cord at one end of the pole. This was all done in a few minutes' time. The brakeman then raised the pole to the wires above. The next second the connection was made and the conductor was talking to the dispatcher at the station 20 miles away.

"In less than a quarter of an hour an engine shot into sight, and in a short time our engine was repaired and we were speeding on our way.

"Having traveled upon railroads a good many years, and having been tied up by storms, washouts, engine troubles, etc., for hours, I could not help but draw comparison between this modern, efficient, sure means of telephone communication from any point along the line, to the old, and more uncertain system of telegraph."

The demand for good railway telephone equipment is

Interior of Set.

increasing, because of the directness and sureness with which communication can be handled. The Kellogg portable telephone shown here has a new feature attached which increases its value in railway service. This is the spool beneath the instrument proper.

With this arrangement for winding up the cord, the set is made much more compact, and at the same time gives room for plenty of cord.

These instruments are used exclusively on the one well-known road, by linemen, trainmen, and officials along the line, and are being permanently installed on many other railroads in the United States.

Improvements in Motor Trucks.

Nothing is being left undone by manufacturers to increase the efficiency and satisfactory operation of motor trucks and delivery wagons. Improvements are being made in the many new models for the coming year that will make them more reliable, more durable, cheaper to operate and maintain, and more convenient to use. Self-starters that enable the driver to start the engine without leaving his seat or stopping to crank the engine will be found on many of the new models to be seen at the commercial vehicle display during the second week of the Chicago Automobile Show, from February 10 to 15. Several of these are of the electric type, in which a generator driven by the engine develops current that is used in the elec-

tric head lights, tail lamp and interior lights as well as for starting the engine. There will also be compressed air starters and starters operating on gas mixtures.

There will be observed a decided increase in the number of commercial cars having the steering column on the left side and the brake and gear shift levers in the center, which arrangement permits the driver to sit on the left side where he can more easily see other vehicles passing and will not be interfered with by his helper getting in and out of the seat at the curb on the right hand side.

To prevent trucks from getting stalled in mud holes and on icy places, many of the big trucks for next year are designed with differential locks. When one drive wheel spins around on a slippery surface and the truck refuses to move, the lock is set from the driver's seat and stops the action of the differential gears, so that power is applied to both rear wheel and the one that has traction drives the truck instead of remaining stationary.

Chain cases are being fitted to more trucks than formerly. They keep all dirt from the road out of the chains and sprockets, which run in an oil bath. This eliminates most of the noise and friction and greatly decreases the wear of these parts.

Ericsson Social Gaiety.

Mrs. Fred Funsten once took Fred to Niagara Falls (not a h. m.) and so we had the pleasure of showing Fred the beautiful plant where we turn out Ericsson apparatus. Fred allows it's fine and likes it. We like Mrs. Fred, but shyness prevented our saying so before. Of course everybody in Missouri and Kansas and Arkansas know who Fred Funsten is, but if you live in Maine we'll enlighten you —he sells Ericsson steel sets in large quantities from the Monarch Electric Co's big store in Kansas City. Fred is the boss there, even if he isn't the boss at home.

Paragraphs.

THE D. VAN NOSTRAND Co., 25 Park Place, New York, has just issued a new classified catalog book on electricity which is valuable as a reference to every one interested in the art. In it are listed books not only for the beginner, but also books for those who desire specific information on certain topics. The telephone field is well covered by a list of some 35 books, which deal exclusively with various branches of the art. There are also various other books which will interest telephone men. The publishers will gladly send copies of the catalog to those interested.

THE FAIRMOUNT ELECTRIC & MFG. Co., of Philadelphia, is busier now than it has ever been. The president, T. C. Vogel, advise that the chief difficulty the company is experiencing at present is getting sufficient raw material to take care of orders booked.

In its line are embraced several styles of ground clamps, test connectors, etc. The company will be pleased to do any work according to certain specifications. It anticipates that 1913 will break all records.

Samples and particulars concerning any of the Vogel specialties can be had upon request. The company's address is 2203 Pearl street, Philadelphia.

Indianapolis Mayor Opposes Merger Terms.

Mayor "Lew" Shank, of Indianapolis, has announced that he will oppose the unification of the local telephone systems under the terms being considered by the companies and the board of public works, under which the maximum rate for individual residence service would be $32 or $30 a year. The mayor says he does not believe the residence rate being considered would be for the best interests of the people.

"The Indianapolis Telephone Company is now charging $24 a year for such service," said the mayor, "and I believe has been making money at that rate. The company already has a right to charge $30 a year for this service, and I can't understand why the companies are so anxious to have the city fix a rate of $32, when the Indianapolis company already has a right to charge $30 and can charge more as the number of subscribers increases.

"It looks to me as though the present negotiations for unification on the part of the companies is an effort by the Indianapolis company to get out of its franchise requirements that it should spend $500,000 for improvements, including the installation of a switchboard, within a certain length of time. I expect to insist that the board give the company no further extension of time to complete this expenditure, when the present extension expires, March 1."

The Latest Bell Merger.

The Southwestern Telegraph & Telephone Co., which, with a capitalization of $40,000,000, is to take over several Bell companies in the southwestern part of the United States, is a new corporation recently formed under the laws of New York. Its authorized capital is $10,000,000 in excess of the aggregate capital stocks of the various companies to be absorbed, but it is said that no new stock will be placed on the market at this time.

The Southwestern will take over the Bell Telephone Co. of Missouri, the Missouri & Kansas Telephone Co. and the present Southwestern Telegraph & Telephone Co. Headquarters will be in St. Louis.

The directors of the new company are: James Campbell, John A. Holmes, Frank H. Hamilton, R. McKittrick Jones, E. D. Nims, Henry W. Peters, H. J. Pettingill and F. O. Watts, St. Louis; U. N. Bethell, Theo. N. Vail and C. H. Wilson, New York; C. S. Gleed, Topeka, Kas.; A. C. Jobes, Kansas City, Mo.; Royal A. Ferriss, Dallas Tex. and David McKinstery, Oklahoma City.

Michigan Company Expanding.

When the United Home Telephone Co., of Ludington, Mich., completes its new line to Grand Haven, and reconstructs the Fremont line, it will have expended $10,000 during the past year in various improvements to its system. This is the largest amount of improvement work that the two merged companies, the United Home and the Citizens, of Muskegon, have ever done in one year, says Thomas Bromley, Jr., manager of the company.

The company is now engaged in putting through an iron circuit to its Grand Haven exchange. At the present time the company has a copper circuit to Fruitport, which is used for Grand Haven business. The intention is to connect the Fullport copper line with Grand Rapids, and thus give another copper circuit to Muskegon-Grand Rapids business, which is mounting daily. This will give the Citizens company seven circuits to Grand Rapids. Two crews are at work on the Grand Haven line.

The Fremont line will be entirely rebuilt, work on the improvement beginning in January. The present line follows the old state road, now abandoned.

Kentucky Commission Authorizes Mergers.

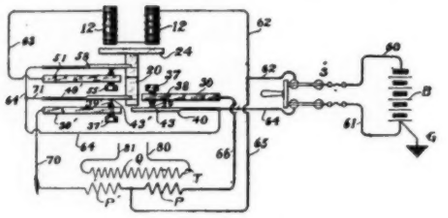
The Railroad Commission, of Kentucky, has authorized the purchase by the Fayette Home Telephone Co., of Lexington, Ky., of the property of the Cumberland Bell in Fayette and in Fayette and Woodford counties. It is provided that there shall be no increase in local rates and that, where the two present schedules of toll rates vary, the lowest shall be adopted.

Similar action was taken by the commission relative to the situation at Winchester, Ky., where the Old Kentucky company sold its property to the Southern Bell.

Record of Telephone Patents Recently Issued

1,043,810. November 12, 1912. JACK; A. F. Dixon and W. E. Freeman; assigned to Western Electric Co., New York. Comprises a pole telephone jack mounted on a bracket and properly protected from the weather. Included are fuses and lightning protective equipment.

1,043,906. November 12, 1912. POLE CHANGER; W. W. Dean; assigned to Dean Electric Co., Elyria, Ohio. Feature consists



No. 1,043,906.

of a motor magnet which controls a vibrator. Intended for harmonic party line ringing and is run from a battery.

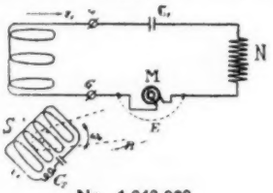
1,043,923. November 12, 1912. STRENGTHENING ELECTRIC ALTERNATING CURRENTS; R. Goldschmidt, Darmstadt, Germany. Intended for long distance telephone and telegraph. Weak telephone currents are passed through a primary winding and a syntonized secondary is rotated above synchronism in its field.

1,044,117. November 12, 1912. TELEPHONE RECEIVER; C. Adams Randall, Boston, Mass. The feature is a permanent adjustable magnet which is made of several curved pieces.

1,044,229. November 12, 1912. AUTOMATIC TELEPHONE SYSTEM; E. Neuhold; assigned to Deutsche Telephonwerke, G. M. B. H., Berlin, Germany. Deals principally with a method of controlling the selector switches.

1,044,538. November 12, 1912. SELECTIVE APPARATUS FOR PARTY TELEPHONES; D. W. Kneisley, Dayton, Ohio; assigned to Dayton Telephone Lockout Mfg. Co. Lockout and automatic restorer. A special switch controls the impulse transmitter mechanism.

1,044,747 and 1,044,748. November 19, 1912. TELEPHONE SYSTEM; H. P. Clausen; assigned to Stromberg-Carlson Tele-



No. 1,043,923.

phone Mfg. Co., Rochester, N. Y. Deals with a common battery system, especially the line and supervisory signals.

1,044,865. November 19, 1912. TELEPHONE EXCHANGE SYSTEM; W. W. Dean; assigned to Dean Electric Co., Elyria, Ohio. Describes a metallic circuit, common battery system having line and cutoff relays for each line.

1,044,870. November 19, 1912. GUY ANCHOR; C. D. Enochs, La Crosse, Wis.; assigned to Vote-Berger Co. Consists of an iron bar having folding, fan-shaped blades on one end. The anchor is driven into the ground and then twisted, thus opening the blades.

1,044,981. November 19, 1912. COMBINED TELEGRAPH AND TELEPHONE SYSTEM; C. L. Bopp, Hawkeye, Iowa. Relates to a balanced system having condensers and inductances included at each station to separate the line currents.

1,045,034. November 19, 1912. TELEPHONY; M. L. Johnson; assigned to Corwin Telephone Mfg. Co., Chicago. Covers a pilot clearing-out lamp associated with each group of line signal lamps.

1,045,077. November 19, 1912. TELEPHONE SIGNALING APPARATUS; F. D. Powell; assigned to American Coin Register Co., Chicago. Exchange operator is signaled by the insertion of coins at pay stations, which complete an electric circuit.

1,045,271. November 26, 1912. SIGNALING CIRCUIT FOR TRAIN DISPATCHING; J. C. Field, Orange, N. J.; assigned to Western Electric Co., New York. A party line selective step by step circuit. Special impulse-sendiig mechanism is associated with the selector.

1,045,413. November 26, 1912. INDUCTIVE TELEPHONE AND TELEGRAPH INSTALLATION; H. Von Kramer, Erdington, Birmingham, England. Describes a combined telephone and telegraph system for communication with a moving railroad train. An inducing wire loop is carried on the cars.

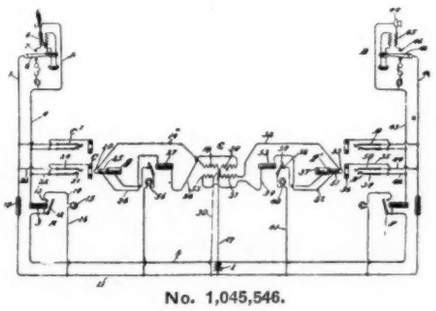
1,045,515. November 26, 1912. TELEPHONE EXCHANGE SYSTEM; E. E. Clement, Washington, D. C.; assigned to North Electric Co., Cleveland, Ohio. Covers a divided multiple, partly manual and partly automatic, switchboard.

1,045,546. November 26, 1912. CENTRAL ENERGY TELEPHONE SYSTEM; C. L. Goodrum, Philadelphia, Pa.; assigned to Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y. Covers a special arrangement of repeating coils.

1,045,600. November 26, 1912. TELEPHONE TRANSMISSION SYSTEM; J. C. R. Palmer, Brooklyn, N. Y.; assigned to Western Electric Co. Relates to sub-station arrangement for long-distance use.

1,045,820. December 3, 1912. TELEPHONE METER; G. Deakin; assigned one-half to McMeen & Miller, Chicago. Describes a meter in which the counting mechanism is actuated by a pivoted armature of two electromagnets.

1,045,845. December 3, 1912. TELEPHONE SYSTEM. E. R. Hobbs, Buhl, Idaho. Provides for connection, in an exchange, of magneto and common battery lines.



No. 1,045,546.

1,045,925. December 3, 1912. SERVICE METER SYSTEM. C. S. Winston; assigned to Kellogg Switchboard & Supply Co., Chicago. Describes a meter for a two-wire common battery system.

1,045,967. December 3, 1912. TRANSMITTER CASING. F. Gottschalk, New York. An air- and water-tight casing which has a screw adjustment for the resistance cell.

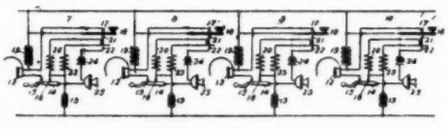
1,045,968 and 1,045,969. December 3, 1912. TELEPHONE TRANSMITTER; F. Gottschalk, New York. Relates to a rolled or tempered diaphragm having an initial stress. Covers details of special water-tight construction.

1,046,554. December 10, 1912. TELEPHONE RECEIVER; C. L. Chisholm, Maryville, N. B., Canada; assigned to Chisholm Transmitter & Telephone Instr. Co. Feature is a rigidly supported diaphragm, accomplished by means of a stiff ring fastened to the periphery of the diaphragm.

1,046,689. December 10, 1912. TELEPHONE HOLDER; R. M. Vick, Canton, Ohio. Describes a bracket for holding a desk set.

1,046,952. December 10, 1912. AUTOMATIC TELEPHONE SYSTEM; E. Blos, Schöneberg, near Berlin, Germany; relates to the interconnection of preliminary and first selectors. Two current impulses are allowed for digit and the selectors have only a short linear movement. Special connections are provided in the sets, which are in bridged across the line.

1,045,686. November 26, 1912. INDICATOR; A. F. Dixon; assigned to Western Electric Co., New York. Used for a semi-



No. 1,045,600.

automatic exchange trunk line. Indicating wheels are controlled by electromagnets.

1,045,725. November 26, 1912. TELEPHONE BELL; L. McMinn, Knoxville, Tenn. A *U*-shaped attachment is secured to the rim of the gong. The striker vibrates between the arms of the attachment.

Legal Cases and Decisions

By A. H. McMillan

Induction from Paralleling High Tension Line.

"Here is our situation: We have in operation and have had for several years, a grounded rural telephone line, running out of our city for a distance of eight miles. This line, although of the grounded type, has always given first class service to our patrons who are connected with it. Now there is at the present time, in the course of construction on the opposite of the highway from our line, a high tension transmission line. This line when completed is to be operated at a voltage of 13,000 volts. We believe that when this line is put in operation, it will practically render our line, which it parallels, useless.

Our company is operating under a regular charter from the state and it seems to us that we, as a prior operating company, should be allowed to continue the operation of the line in question without interference, inductive or otherwise.

Will you please furnish us with any references you may have on this subject and also inform us whether there are any cases of a similar nature now being tried in courts.

I have mentioned our own line in particular, but several co-operative lines are also in the same vicinity and they will be affected by induction as much or more than we will be."

Between the electric light and power companies on the one hand, and telephone companies on the other, the company whose line is first rightfully in possession is entitled to protection against interference by induction on the part of the company whose line is subsequently erected. For any damages caused by induction the later established company is liable, and the company injured is also entitled to an injunction to restrain the electric company from stringing its wires in proximity to those of the telephone company.

Prior authority to occupy or prior occupation of the streets, does not confer upon any company any exclusive right, but any subsequently licensed company is under the duty to so maintain its wires and lines as not to interfere with the prior occupant's right to properly operate its lines and to transact the business authorized by its franchise. Joyce on Electric Law, Section 517, Nebraska Telephone Co. vs. York Gas & Electric Light Co., 27 Neb., 284, 3 American Electrical Cases, 364.

A telephone company can obviate the serious effects of induction by increasing the distance between its wires and those of the electric company, as the effect of induction at a distance of 15 feet is but slight when the circuits are metallic and wires properly transposed, the rule being that induction between parallel lines is inversely proportioned to the square of the distance between them. Where the telephone company can avoid induction by this means, it is its duty to do so Rocky Mountain Bell Telephone Co. vs. Salt Lake City Railway Co., 3 American Electrical Cases, 356. McMillan on Telephone Laws, section 139.

We do not know of any cases of a similar nature now pending, but if our readers do, we wish they would write us so that the information may be given to our interrogator.

Reasonable Discrimination Approved.

The Peoples Telephone Co. brought suit against Thomas Lewis in the Circuit Court of Columbia County, Wis., to recover for telephone service at the rate of $1 per month for 30 months. The answer admitted receiving the service, but pleaded a contract, ante-dating the public utility law, to the effect that the price for such service should not exceed $10 per year. The contract was based upon the fact that in 1902, Lewis subscribed for and became the owner of one share of the common stock of the company of the par value of $50, paying therefor $55. The agreement for rate was embodied in and became a condition of a certificate of stock. From a judgment for the subscriber, the telephone company appealed.

On appeal the company made the point that the contract with the defendant was discriminatory at common law. In answer to this the court held that only unreasonable discriminations were condemned and found that there was no proof of an unreasonable discrimination in this case. It was also contended that the contract was a discrimination under the terms of section 1791a of the statutes of 1898, which requires every telephone company to furnish its service without discrimination.

The court in its opinion referred to section 1797-91 of the laws of 1907, which provides that the furnishing by any public utility of any product or service at the rates and upon the terms and conditions provided for in any existing contract executed prior to April 1, 1907, shall not constitute a discrimination. The court held that the contract was not rendered invalid by the statute, so must have been and was recognized by the legislature in its enactment, to be intended as a mere statement of a common law rules against unjust discriminations.—Peoples Telephone Co. vs. Lewis, 138 Northwestern 100.

Determining Negligent Construction.

In determining whether an electric company was negligent in maintaining a high voltage wire near a telephone wire, the elements to be considered are: the nature of the current carried by the wires; the proximity of the lines; the lack of necessity for dangerous proximity; the ease with which the danger could be avoided; and the length of time the danger continued. So held the court in a suit for injury brought by a telephone lineman against a telephone company and an electric railway company, jointly.

The electric company in defense tried to show that when the accident occurred, the lineman was assisting in stringing on the telephone company's pole, a wire not authorized to be strung under the ordinance by which the poles were maintained. The court refused to recognize this defense as sufficient. The electric railway company also contended that it was not required to anticipate or guard against any one going to the top of a telephone pole, because when its high tension line was constructed, there was only the lower cross arm on the telephone poles.

The court held that this contention was answered by the fact that there was at that time cut into the upper end of the telephone pole a mortise, or gain, which was intended for an additional cross arm. This mortise was held to be a notice that another cross arm might or probably would be attached to the pole at some future time. Swan vs. Salt Lake & Ogden Railway Co., 127 Pacific, 267.

Not a Latent Danger.

A troubleman for a telephone company was about 26 years of age and had received a fair education. He had worked as troubleman and had repaired breaks on telephone wires for more than two years for the Tri-State Telephone & Telegraph Co. of Minneapolis. During this time he had a number of trouble cases every day, growing out of crossings and other causes, and was experienced in making such repairs. In 1909 he was employed as troubleman and inspector of the lines and instruments of the Peoples Telephone Co. at Superior, Wis., being a combination man. His duty was to install telephones, repair instruments, wires and cables and do any other work that one man could accomplish alone.

The telephone company and the Superior Water, Light & Power Co. had about 400 crossings in the city. At one place the telephone lines crossed the light and power lines about one foot and a half above them, resting on arms built on the telephone poles. The lowest line was about 20 feet from the ground and carried between 75 and 175 volts. The electric light wires carried 2,300 volts. There was only enough insulation on the latter wires to protect them from the elements. The troubleman had been warned not to place telephone wires over light and power wires alone, and not to run any chances.

He was sent to the particular location to replace a telephone wire that had broken away from the pole. He spliced a piece of wire into the broken line which was not then charged. This he carried up a pole attached to a piece of marline. The neighbors heard him exclaim and one went to him with an offer of help. He said he had received a slight shock but was all right and descended the pole. He then began walking backwards pulling the wire, which he had drawn over the light and power wires and over the crossarm of the pole where it belonged. He was seen to fall, while walking backwards pulling the wire, and when reached was dead.

Suit was brought against the telephone and electric company jointly, and a verdict was given in favor of his administrator. The United States Court of Appeals reversed the decision on the ground of contributory negligence. Peoples Telephone Co. vs. Conant, 198 Federal, 624.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personal.

A. S. KELLY has been appointed traffic superintendent of the Iowa Telephone Co., succeeding J. P. Mason.

E. J. RICHARDSON has resigned his position as manager of the Corn Belt Telephone Co., at Parkersburg, Iowa.

C. R. WALKER, of Salisbury, has been appointed superintendent of the Chesapeake & Potomac Telephone Co., in Kent county.

E. R. GARDNER has been promoted to the management of the Coalinga office of the Pacific Telephone & Telegraph Co. E. F. Bradley, of San Francisco, will take Mr. Gardner's place as manager of the Modesto exchange.

C. C. MCFARLAND has resigned his position as manager of the Lyons exchange of the Missouri & Kansas Telephone Co., and W. B. Oliverson, formerly of the plant department, has succeeded him.

H. J. JOHNSTON has been transferred from his position as local manager of the Michigan State Telephone Co., at Charlotte, to Traverse City where he will have the supervision of the company's business in five counties.

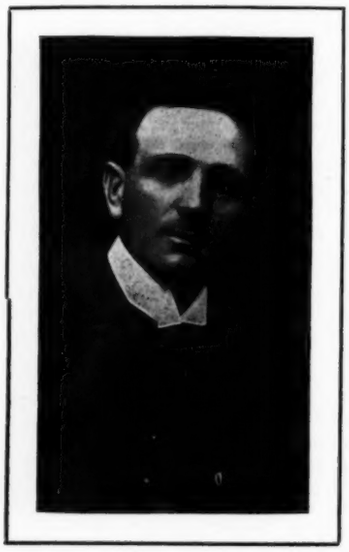
ALBERT ELIAS, formerly superintendent of the New York Telephone Co., at Syracuse, has been appointed superintendent for the Southern Bell Telephone & Telegraph Co., at Dallas, Texas, and will assume his new duties the first of the year.

W. C. FREEMAN has been appointed Canadian representative of the Century Telephone Construction Co., at Toronto, F. J. Goodman, who has been representing the Century company in Canada, will take up work for the company in the United States.

FORD HUNTINGTON, formerly treasurer of the Bell Telephone Co., of Pennsylvania has been elected vice-president in charge of financial and accounting matters. W. S. Peirsol, former secretary and assistant treasurer, has been made secretary and treasurer of this company.

Obituary.

WILLIAM J. THILL, of Des Moines, Iowa, manager of the Independent Toll Clearing House and secretary of the Iowa Independent Telephone Association, died on Tuesday evening, at the Presbyterian Hospital, Chicago. Mr. Thill had been a sufferer for many years from some ill-defined trouble and a few days ago concluded to submit to an operation in the hope of discovering and remedying his ailment. Following the operation pneumonia developed and he sank rapidly, passing away on Christmas Eve.



W. J. Thill.

In the eight years which he spent in the Independent telephone business in Iowa, Mr. Thill made a host of friends. Probably no man in the state was more widely known or better loved. His was a sterling character. To a thorough knowledge of the business he coupled a devotion to its interests rarely equalled. In addition to his fine, upright qualities of mind and heart he possessed a genial soul and a most lovable disposition. He always managed to discern the best there was in the people with whom he associated, permitting their less desirable qualities to sink into obscurity. Blessed with a mellow and kindly sense of humor, he was never sarcastic nor bitter. He preferred to laught with, not at, people. He believed the world to be a mighty good old place and, be it said here, it has been the better because of "Big Bill" Thill, as his friends affectionately called him.

An instance of his constant and intense desire to be helpful is found in one of the last things with which he concerned himself before going to the hospital. TELEPHONY'S Directory of the Telephone Industry is just being prepared for the press and Mr. Thill spent several hours in carefully going over the list of companies in Iowa in order that it might be absolutely accurate and up to date. Jokingly announcing that he expected to be placed on the paper's payroll, he, nevertheless, finished this tiresome task without expectation or desire of return and felt that he had done nothing out of the ordinary. And this is but one instance out of thousands which illustrate his willingness to "help the other fellow along."

One frequently hears the expression that we "love a man for the enemies he has made," the inference being that a man is not a positive character who makes no enemies. Either this is a fallacy, or "Big Bill" Thill was the exception which proves the rule. We do not believe that he had an enemy in the world. We have never heard a man or woman say other than kindly things about him. His gentle, kindly nature found universal appreciation. And yet he was a strong man, and a brave one. When the Spanish-American war broke out, he was one of the first in his section to enlist and, for over a year, he served with his command in Cuba and elsewhere. Later he served his county in civil offices with the same fidelity to duty.

Mr. Thill was unmarried. He was born in New Albin, Iowa, July 29, 1875, and died December 24, 1912. His career was all too short. His family has lost an exemplary son and brother; the Independent telephone industry has lost a splendid member and a stalwart worker.

New Companies.

SHABBONA, ILL.—The Inter-Town Telephone Co. has been organized with $5,000 capital stock. The officers are: President, E. J. Brewer, Shabbona; vice-president, C. H. Wilkinson, and secretary, Albert Larson of Shabbona.

THOMASVILLE, N. C.—Articles of incorporation have been filed by the Hambys Creek Telephone Co. with a capital stock of $10,000. The incorporators are: J. D. Carter; A. L. Bowers, and Luther Grimes.

CREEDS, VA.—The Creeds Telephone Co., has been incorporated with $6,000 capital stock. The officers are: H. C. N. Batten, Back Bay, president; R. F. Etheridge, Back Bay, secretary; N. A. Nicholson, Creeds, treasurer. The directors are: H. S. Etheridge, Creeds, and John Williams, Munden.

Financial.

FORT WAYNE, IND.—The Home Telephone & Telegraph Co. has made an increase of $250,000 in its capital stock.

Elections.

CHILLICOTHE, ILL.—The Peoples Telephone Co. held its annual meeting and elected the following officers: president, E. S. Street, Henry, Ill.; vice-president, A. G. Hawley, Clinton, Ia.; secretary, C. B. Cheadle, Joliet, Ill.; and treasurer, C. A. Camp, Henry, Ill.

Miscellaneous.

FLAGSTAFF, ARIZ.—An appropriation of $40,000 has been asked of Congress for the purpose of building a telephone line from this place to the Navajo Indian School at Tuba.

LYERLY, GA.—The Farmers Telephone Co. is building a new telephone line between Lyerly and Summerville.

PINEVILLE, KY.—The Pineville Home Telephone Co. has purchased the Harlan Telephone Co. and will make extensive improvements.

INDIANAPOLIS, IND.—Notice of dissolution has been filed by the Lynn Local Telephone Co.

HAMILTON, N. Y.—The Hamilton Telephone Co. has sold its property to the New York Telephone Co.

RICHMOND, VA.—The Chesapeake & Potomac Telephone Co. of Va. has purchased the Accomac & Northampton Telephone Co.

USING ALLEN SODERING STIK
ALLEN PRESTO SODER
USING TUBE OF ALLEN SODERING PASTE WITH ATTACHABLE ALUMINUM NOZZLE
FOR SODERING JOINTS—

ALLEN-Flux

Stik-Paste-Salts-Liquid

Your switchboard and line wire joints are too important for you to take any chances with them—soder them all and soder them with a flux that will give you a permanent joint—ALLEN-Flux.

Line wires unless sodered will give you trouble. Having only two hands your lineman on the pole has trouble managing the flux, soder and torch all at the same time—he is therefore careless and your service suffers—to remedy this condition supply him with

ALLEN PRESTO SODER PASTE STICK

The combination flux and soder that is easily applied by squeezing aluminum tube. Send 15c and your dealer's name for sample of ALLEN-Flux (any form) or ALLEN PRESTO SODER

L. B. ALLEN CO., Inc.

4578 N. Lincoln St. Chicago

BRANCHES

New York Chicago San Francisco Portland Winnipeg

Belden Telephone Cords

Try them if you are not using them now.

Our stocks are of such size and variety that we can probably fill your orders without waiting to manufacture them.

We will gladly mail you **samples** or quote you prices if you will request them.

Belden Manufacturing Company

FACTORY AND OFFICES

2302 So. Western Ave., CHICAGO

A New Year is awaiting you

A *New Year* in calendar and in experience. Put aside the old, troublesome, unsatisfactory cords and take on Runzel-Lenz Cords.

Learn the advantage of using a *dependable cord* —learn what the right cords will do toward perfecting your service and lowering your upkeep expense.

If you do not already know Runzel-Lenz Cords—it will indeed be a *New Year* for you when you install them—and a *happy one.*

Write for free trial samples—they'll convince you of their superiority.

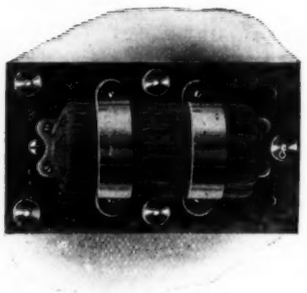
Runzel-Lenz Electric Mfg. Co.
1751 N. Western Avenue
Chicago

Pacific Coast Agents for R. L. cords
Manny-Myers Co.
Seattle, Wash.

Missouri-Kansas-Arkansas

TWO WAYS OF MAKING MONEY

No. 1—Get the habit of ordering telephones and supplies shipped together from a point "right where you live"—**MONARCH ELECTRIC CO., 1111 Wyandotte St., Kansas City, Mo.**



Ericsson Phantom Circuit Transformer

They carry every supply known and also the famous **Ericsson Telephones**—also known. This habit will make money on freight saved, cartage saved, and time saved.

No. 2—Get some **Ericsson Phantom Circuit Transformers** at once and double or triple the earning capacity of your toll lines. Rent the additional circuit you thus obtain for telephoning or telegraphing. It's a great earning scheme. **MONARCH ELECTRIC CO.** carries them, or write to

ERICSSON MFG. CO.

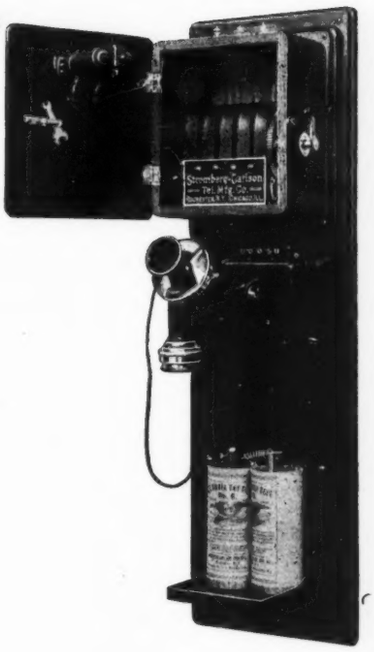
1102 Military Road, BUFFALO, N. Y.

Other Branches at

600 Preston Ave., Houston, Texas.
209 3rd Ave. N., Nashville, Tenn.
706 Paulsen Bldg., Spokane, Wash.
530 Golden Gate Ave., San Francisco, Cal.
214 S. Second St., Cedar Rapids, Iowa.
453 Atlantic Ave., Boston, Mass.
28 Market Ave., S. W., Grand Rapids, Mich.
329 Ankeney Ave., Portland, Ore.
22 N. 6th St., Minneapolis, Minn.
53 East Broadway, Butte, Montana.
136 So. 10th St., Lincoln, Neb.
517 W. Main St., Louisville, Ky.
1233 So. Olive St., Los Angeles, California.
24 W. Forsythe St., Jacksonville, Fla.
73 W. Water St., Milwaukee, Wis.
121 S. Meridian St., Indianapolis, Ind.
34 Adelaide St. W., Toronto, Canada

Please tell the Advertiser you saw his Announcement in TELEPHONY.

Four of a Kind at Reduced Prices



The sale of these high grade quality Magneto Telephones has been so great we are willing to make this new offer, which provides a greater saving to all who will buy now.

Regular Prices

Narrow and Wide Battery Box Type

Series and Bridging

Golden Oak and Some Walnut Woodwork

5-Bar Bridging Telephone.....$7.70 Net
4-Bar Bridging Telephone.....$7.29 Net
3-Bar Series Telephone.....$5.67 Net

Buy in Groups of Four (4) of same code, at one time, at these reduced prices:

4 5-Bar Telephones, $30.00 instead of $30.80
4 4-Bar Telephones, $29.00 instead of $29.16
4 3-Bar Telephones, $22.50 instead of $22.68

Code No. 86

More 5-Bar, 1600-Ohm Bridging Telephones are sold than all others combined. Above unretouched illustration was made last week and shows one telephone of a recent lot just made. Note standard apparatus throughout and two (2) cells of Columbia Dry Battery. Battery Box removed but furnished with every set.

Each telephone is packed in an individual box and four (4) boxes are cleated together to form a group sold at special reduction in prices. This package will stand rough transportation.

The reason we are selling hundreds of these telephones weekly is because every progressive telephone man recognizes the big fact that this is his only chance to get all things desirable in telephone equipment at very reasonable prices. Remember—we sell no remade or second-hand parts with these Series and Bridging Telephones. We manufacture these types regularly, while we have the stocks to sell, at prices everybody can afford to pay. If you have never bought before, let us ship 4 No. 86 Telephones to you today—if you can use any more of these telephones in future, order more now—*the parts bought separately would cost you more than we are asking for this complete telephone.*

Four No. 86 Telephones

Because all orders are subject to prior sale, you should place your order TODAY. For the same reason we make a special effort to ship promptly. *Just tell us when and how many, today.* Write either office.

Stromberg-Carlson Telephone Manufacturing Co.

Rochester, New York, U.S.A.

Chicago, Ill. **Toronto, Can.** **Kansas City, Mo.**
Los Angeles, Cal. **San Francisco, Cal.** **Seattle, Wash.**

Diamond "Rapid Fire" Drill

PATENT APPLIED FOR

For Economically

Drilling Holes in Brick, Stone or Concrete

THE Diamond "Rapid Fire" Drill is designed to reproduce the same action as is produced by a regular stone hammer and drill. By rotating the crank it will deliver similar blows with EIGHT TO TWENTY TIMES THE RAPIDITY.

It is particularly adapted to telephone work in drilling holes for expansion bolts and wherever necessary to wire through walls of brick, stone or concrete.

"DIAMOND N" SCREW ANCHOR

15 SECONDS required to drill a hole for ¼" x 1" Diamond Screw Anchor in concrete with Diamond "Rapid Fire" Drill.

"DIAMOND N" EXPANSION BOLT

1 MINUTE 35 SECONDS required to drill a hole for ½" x 4" Diamond Expansion Bolt in concrete with Diamond "Rapid Fire" Drill.

Diamond Expansion Bolt Co.

Manufacturers of DIAMOND SPECIALTIES

90 West Street, Corner Cedar NEW YORK

WESTERN ELECTRIC COMPANY

Manufacturers of the 6,000,000 "Bell" Telephones

New York	Atlanta	Chicago	Kansas City	San Francisco	Montreal	London
Boston	Savannah	Milwaukee	Oklahoma City	Oakland	Toronto	Antwerp
Philadelphia	Richmond	Cincinnati	Denver	Portland	Winnipeg	Berlin
Pittsburg	St. Louis	Indianapolis	Omaha	Seattle	Calgary	Paris
Buffalo	Dallas	Minneapolis	Salt Lake City	Vancouver	Johannesburg	Rome
Cleveland	Houston	St. Paul	Los Angeles	Edmonton	Sydney	Tokyo

EQUIPMENT FOR EVERY ELECTRICAL NEED

Please tell the Advertiser you saw his Announcement in TELEPHONY.

Time Savers for Business Men

Many Independent Telephone Exchanges would be making more money if they would sell these private telephone systems. Why not go into the matter with us today—we offer the most complete and modern equipments at moderate prices.

Code No. 903

12 Station Set.

Inter-Comm-Phone Systems. An inter-communicating telephone system employing a full metallic circuit between all stations in the system. Automatic key for ringing and selecting. Desk Telephones are in four sizes—6, 12, 22 and 32 station capacity. Non-Flush Wooden Wall Telephones—6, 12, 22 and 32 station capacity. Metal Flush Type Telephones, three styles—6, 12 and 22 station capacities. Cables, battery boxes and all accessories of our own design and make. Inter-Comm-Phones to connect with Independent Automatic and Manual Central Office Exchange Systems.

Code No. 905

6 Station Set.

Private Line—Two Way Telephone System—Known as the "Little Time Saver" for house to garage or other purposes where only two instruments are required. Either station can call the other and talk. Wiring includes a pair for talking and one signal wire. Standard transmitter and receiver. Two Desk Type Telephones for same system.

Code No. 965

Private Line. Two-way.

Code No. 964

6 Station Set.

Common Talking—Selective Ringing Telephone System—The selective ringing feature enables one to call any station in the system without disturbing the other, and common talking which permits of but one conversation being carried on at a time. Standard transmitter and receiver. Wall and Desk Type Telephones for 6 and 11 station capacity systems.

Code No. 971

10 Station Set.

Common Talking—Selective Ringing Telephone System—With Common Battery Central Exchange Connection. Same as above with the new additional feature of enabling any station calling City or Main Exchange by signalling over a button designated "Exchange" button. Something all other systems lack, unless imitated soon. Wall and Desk Type Telephones for 5 and 10 station capacity systems.

Code No. 969

Station Set.

Common Talking—Central Station Telephone System—Any station calls the Central Telephone and is connected with any other party at will of Central Telephone attendant. Common talking pair for all stations and individual signal wire from Central Telephone to each Station Telephone. For Schools and Factories where this central control feature is useful. All types and unlimited capacity.

We will refer you to thousands of the largest business concerns in the country that own and operate a Stromberg-Carlson Private Telephone System and prefer it to any other.

Send For Booklet No. 2901 and Dealers' Proposition.

Stromberg-Carlson Telephone Mfg. Co.

Rochester, New York, U. S. A.

Chicago, Ill. **Toronto, Can.** **Kansas City, Mo.**
Los Angeles, Cal. **San Francisco, Cal.** **Seattle, Wash.**

In Appreciation

We are closing a year of gratifying growth and entering upon a period of new and greater promise.

To all who have encouraged us with their faith, as well as those who have favored us with their patronage,we extend our thanks and our appreciation.

May the sunshine of success ripen the harvest of your hopes and bring you all the happiness which your labors so richly deserve.

These thoughts and sentiments of Greeting from your friends.

Distributed and Engineered by

The Telephone Improvement Co.

Monadnock Block, Chicago

American Trust Bldg., Cleveland, Ohio

Manufactured by

North Electric Co.

Galion, Ohio

Survive Competition by Making Improvements

Automanual will supply the following:

Average operator answering time 2.5 seconds.

Instantaneous disconnect for recall.

Machine accuracy; automatic ringing; busy test; ring-back and change number.

Unequaled Private Branch Exchange Service.

Operating salaries cost reduced from $1.25 per one thousand calls to 25c in single office Exchanges; greater economy in Multi-office plants where the Automanual connects without employment of "B" Operators.

Comparative savings in outside construction; capacity unlimited. First cost approximately one-third greater than Manual and one-third less than Automatic but economy of operation will pay entire cost.

The AUTOMANUAL process eliminates competition.

All operating Companies using Automanual are successful.

Galesburg, Ill.,	Greensburg, Ind.,	Hood River, Ore.,
Ashtabula, Ohio,	Conneaut, Ohio,	Warren, Ohio

Write for specifications, quotations and outline of self-payment plan

Distributed and Engineered by

The Telephone Improvement Co.,

Monadnock Block, Chicago

American Trust Bldg., Cleveland, Ohio

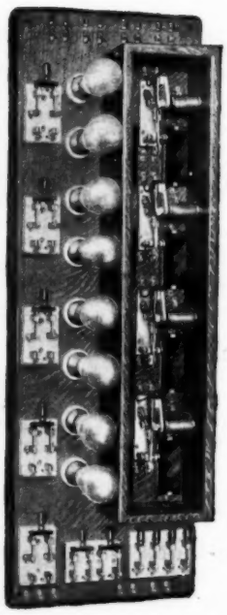
Manufactured by

North Electric Co.,

Galion, Ohio

Harmonic Ringing Equipment

For Magneto Exchanges



The Cracraft, Leich Pulsating Harmonic system is the only system worthy of consideration.

It is the **simplest, surest** and **cheapest.**

We guarantee satisfactory operation for 4-party selective metallic and 8-party selective divided circuit ringing.

Only two vibrators are required. The Converter shown has a duplicate set, one for operation, the other for reserve. Three Crowfoot batteries operate the vibrators continually. Dry batteries are used for ringing and come into service only while calling a subscriber.

The Converter as shown is ready for operation. No special Master key circuits with lamp resistances, condensers, etc., are required. It is a good, straight, clean system for the betterment of your service.

No Cross Ringing
No Hand Generator Interference

Systems now in operation are giving perfect satisfaction. Ask our customers.
Sole manufacturers of North Manual Apparatus.

Cracraft, Leich Electric Co.

Genoa, Ill., U. S. A.

Please tell the Advertiser you saw his Announcement in TELEPHONY.

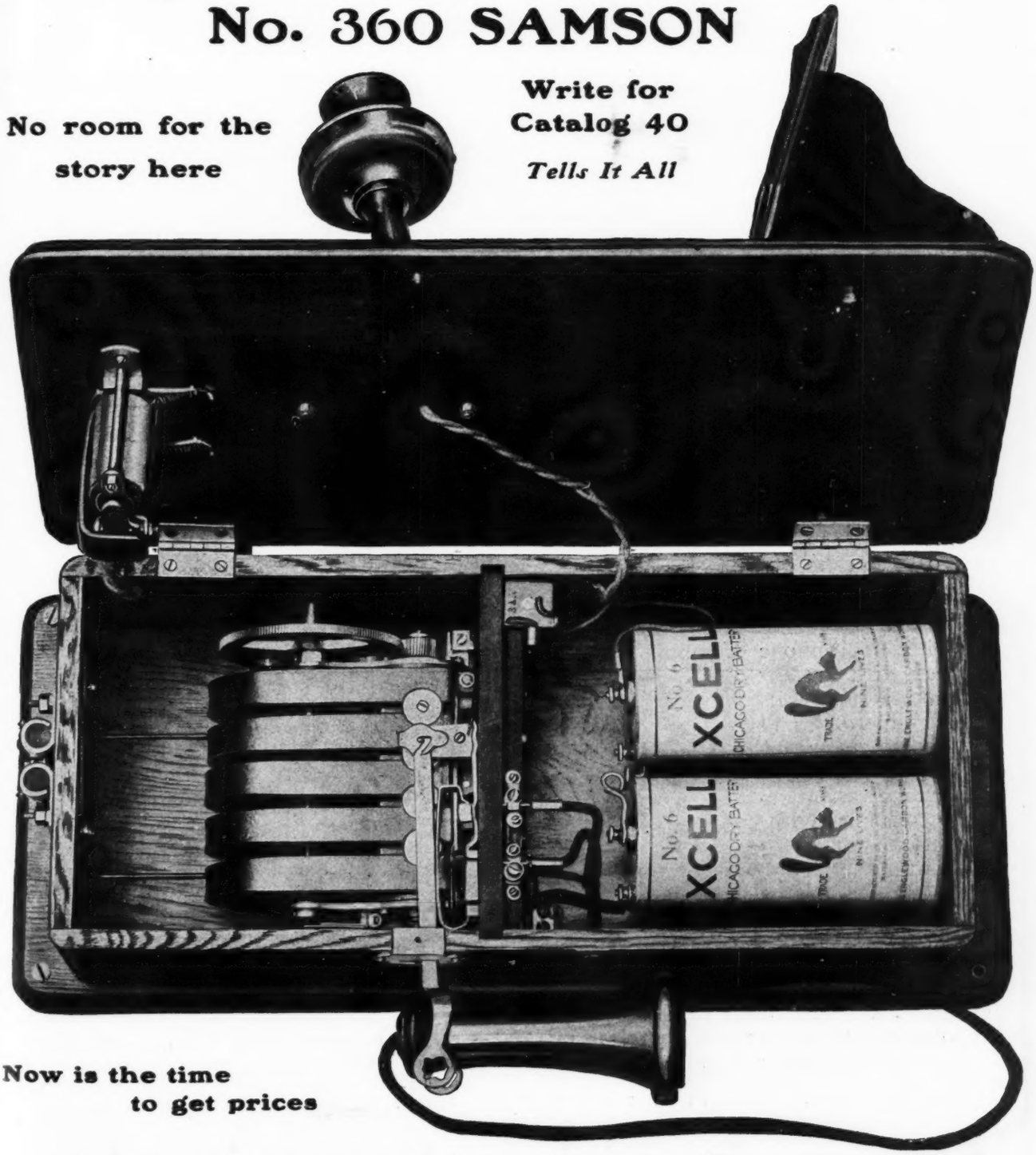
The Biggest Telephone

Value Ever Offered is Found in this No. 360 SAMSON

No room for the story here

Write for Catalog 40

Tells It All



Now is the time to get prices

American Electric Company

A Complete Line of Telephone Apparatus

State and 64th Streets (Englewood Station), Chicago, U. S. A.

Please tell the Advertiser you saw his Announcement in TELEPHONY.

THE DEAN ELECTRIC CO.

LOOK FOR "DEAN" WHERE "QUALITY" SEEN

Cosmos Desk Telephones

This instrument as shown in illustration is made from drawn sheet steel in practically two parts, the pedestal and the transmitter.

The finish is a beautiful black enamel with no metal parts exposed so as to tarnish and become unsightly.

This telephone met with instant success upon its introduction and the first year's output of the Dean factory was entirely consumed without advertising effort.

Some Advantages of Cosmos Desk Telephones

—Black enameled surface with no exposed metal to tarnish and become unsightly.

—No cracks in which dust can collect.

—Smooth contour to surface with no sharp corners — Pronounced "High Art Design."

—One piece from base to transmitter.

—One piece transmitter-front and mouthpiece.

—Hook switch lever removable for convenience in packing or handling.

—Hook lever one-piece, doubled over and reinforced entire length, including prongs.

—Desk cord enters base at either side instead of at back, making it impossible to set stand on cord. Increases life of cord and sweetens subscriber's temper.

—Seamless steel receiver shell.

—Non-deteriorating transmitter with high insulation.

—Always the first selection of the discriminating subscriber and a money saver for the Telephone Company.

Made for either Common Battery or Magneto Systems

MAIN OFFICE AND FACTORY
ELYRIA OHIO.
BRANCHES
KANSAS CITY MO. SAN FRANCISCO CAL.

We Wish Each and Every One a Happy and Prosperous New Year.

No. 14-100 Line Magneto Switchboard

Century Apparatus Is Built for Service.

Its Merits Lie in Correct Designs, High Efficiency Under All Classes of Operating Conditions, and Low Cost of Maintenance.

No. 15-50 Line Magneto Switchboard

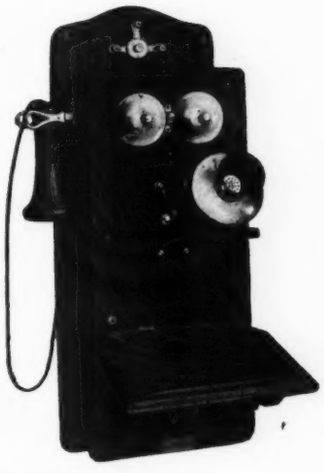
No. 14 Unit Type Magneto Switchboards. Single Position equipped up to 100 lines. Line Signals Type "S" Combination self restoring drops and jacks, 10 Pairs Cords and Plugs, 10 Ringing and Listening Keys, "Floating Contact" Night Alarm attachment — absolutely positive, Complete Operator's Set, Hand Generator, Batteries and Connecting Cable, Cabinet best quartered oak, finely finished. Front and Rear Panels removable.

Complete details given in Bulletin No. 14. Yours for the asking.

No. 15 Unit Type Magneto Switchboard. This board differs from the No. 14 in the cabinet only. The ultimate capacity of the No. 15 is 50 lines, 10 Pair Plugs and Cords, 10 Ringing and Listening keys, particularly adaptable to small exchanges of 200 to 300 subscribers.

Fully described in Bulletin No. 15.

No. 90 Desk Telephone



No. 65 Compact Wall Telephone

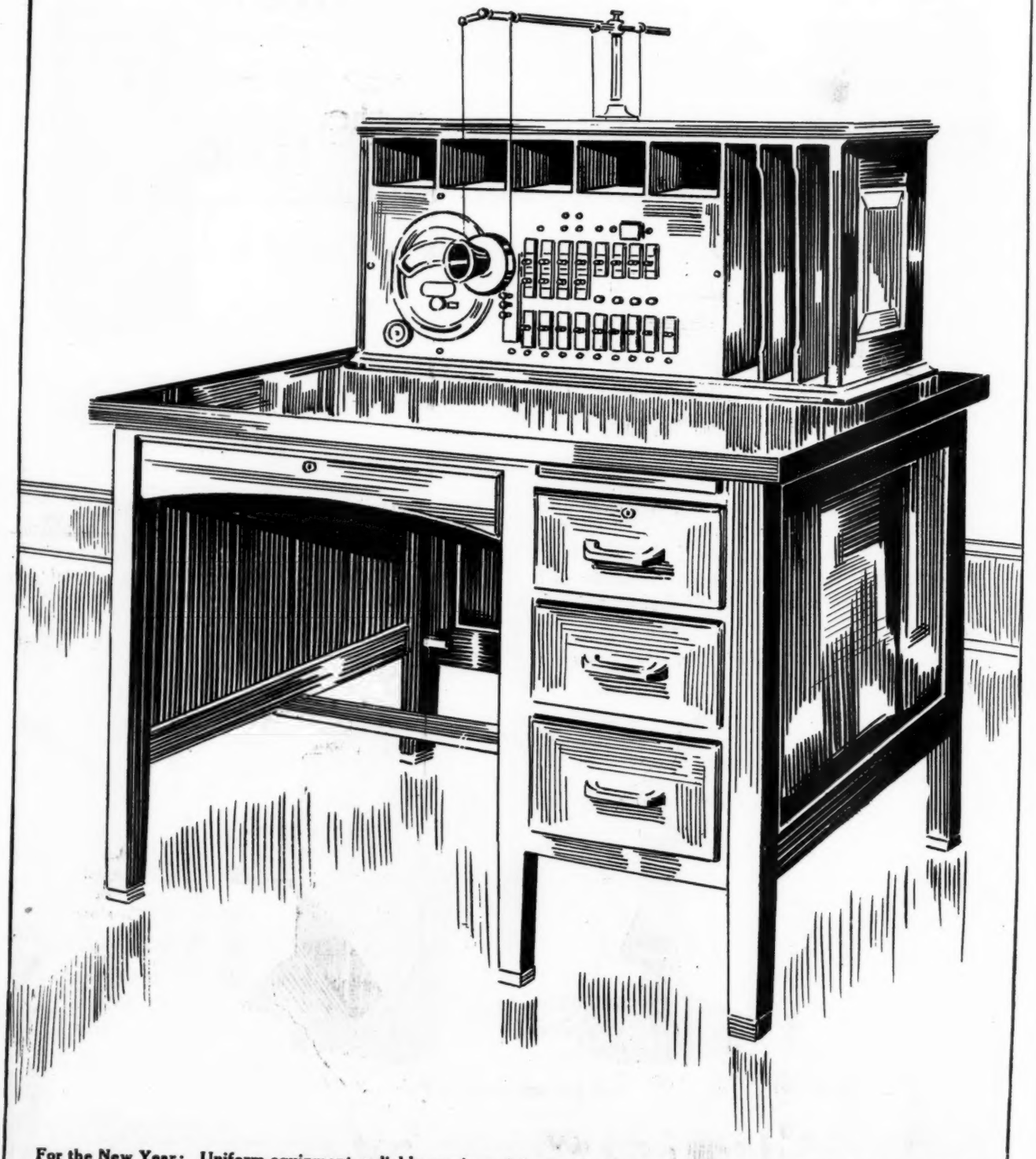
An Incomparable Pair

These Telephones are wired for use on any type of Magneto System, Series, Bridging, 2 party or 4 party lines. Complete description given in Bulletins Nos. 90 and 65.

Century Telephone Construction Company

Buffalo, N. Y. **Bridgeburg, Ont.**

Please tell the Advertiser you saw his Announcement in TELEPHONY.



For the New Year: Uniform equipment, reliable service, minimum of maintenance, maximum of new business. That is the most successful exchange. Our continued effort is to build and sell telephone apparatus nearest this ideal. Have you our bulletin on the multiple switchboard?

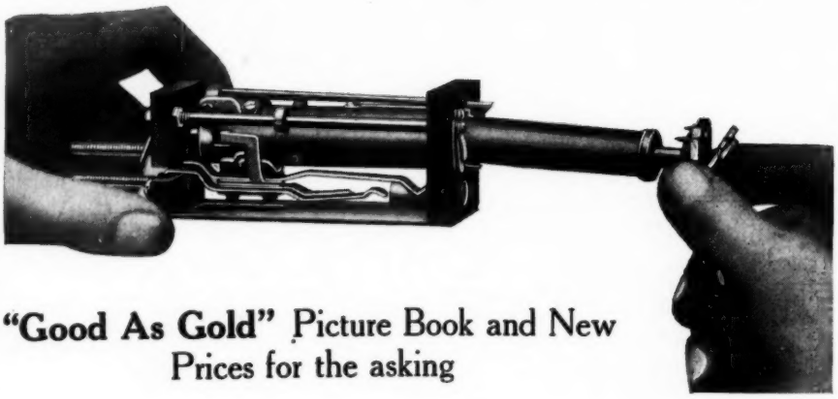
Dec. 28, 1912.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY, CHICAGO

Please tell the Advertiser you saw his Announcement in TELEPHONY.

Please tell the Advertiser you saw his Announcement in TELEPHONY.

"SWEDISH-AMERICAN" is the answer to your question of QUALITY



"Good As Gold" Picture Book and New Prices for the asking

The only Magneto Switchboard having **Self-contained** Drop and Jack with removable coil from the **front.**

In future
CANADA TRADE
will be supplied
direct from **Chicago**

The SWEDISH-AMERICAN TELEPHONE CO. is no longer associated with the DOMINION TELEPHONE MFG. CO.

"Hercules" Telephones have stood the test of time.
Don't be fooled or misled by offers of second-hand Drops.
Deal **direct** with **headquarters** and get the latest **improved** kind.

SWEDISH-AMERICAN TELEPHONE MFG. CO.

5235 E. Ravenswood Park, CHICAGO, ILL.

Business Essays
Connected in Multiple-Series
Number Four

Rural lines who sell dry batteries for gas engine ignition as well as phone work should buy a utility cell. Or rather *the* utility cell—there is only one.

Thus they can buy in quantities; get the quantity price on the ones they use themselves and make a worth while profit on those they sell.

The **Red Seal** is the only dry battery guaranteed for *any* work *any* dry cell can perform.

Guarantee

We will *credit* account, *replace* batteries or *refund* amount paid for batteries including transportation charges if they do not prove satisfactory.

Manhattan Electrical Supply Co.

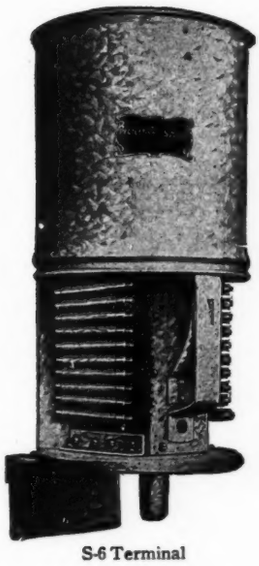
New York Chicago St. Louis

COOK

TERMINALS PROTECTORS

Cook terminals afford the best protection that long experience can develop

WE have made many advances in terminal manufacture, because we have studied patiently the conditions that make for up-to-date construction.



S-6 Terminal

Our S-6 terminal is all metal moisture and weather-proof. Can be used with our Junction Box which secures a very economical and simple means for splicing main leads of cable and extending branches of smaller cable to other parts. *Sleeve Splicing Unnecessary.* Cable testing is simple as this box can be opened more easily than can a cable joint. Impervious to weather. May be installed before terminal if desired.

Our Junction Box. Cover Removed.

Are you interested in more efficient terminal apparatus? Write.

Frank B. Cook.

326 West Madison Street
Chicago

Western Representative:
Manny-Meyers Co.,
Seattle, Wash.

Southwestern Representative:
Tel-Electric Co.,
Houston, Texas

CHICAGO

Please tell the Advertiser you saw his Announcement in TELEPHONY.

The Recognition
That
# Denotes Perfection

OVER 300,000 Automatic Telephones manufactured by us are in operation in the United States in public exchanges owned by private corporations, most of which are competing with manual exchanges in the same cities.

Our Automatic Telephone System has been adopted by the Governments of Great Britain, France, Germany, Austria, Australia, New Zealand and the Provinces of Alberta and Saskatchewan, Canada, wherein the telephone systems are governmentally operated, as well as by private corporations operating public telephone exchanges in South America, Cuba and Hawaii.

(The equipment for Germany and Austria has been manufactured by Siemens & Halske of Berlin, under patent rights granted by this Company to them.)

Automatic Electric Company
Chicago

Please tell the Advertiser you saw his Announcement in TELEPHONY.

Operators' Salaries

¶ The report of Edward W. Bemis on the investigation of the Chicago Telephone Company discloses that the average pay per operator increased 13% from 1907 to 1911.

¶ This report also discloses the fact that the average operator's salary increased from $23.84 per month for the first six months of service to $39.00 per month for the last half of the third year of employment. This pay is for a working day of eight hours, with no Sunday or holiday work. This is an increase of 64% during three years of employment.

¶ Quoting from Mr. Bemis' report on this subject, he states:

> "Plans are now being considered for a pension scheme in all the Bell companies, which will add somewhat to the expense of the company. Further increase of wages, with increased cost of living and the increase of wages elsewhere, are also likely during the next five years."
>
> (Since the completion of Mr. Bemis' report this plan has been inaugurated.)

¶ IS YOUR COMPANY CONFRONTED WITH THIS ENDLESS INCREASE IN OPERATORS' SALARIES?

¶ DO YOU HAVE TO SPEND LARGE SUMS ANNUALLY FOR REST AND LUNCH ROOMS, ADVERTISING, SCHOOLING, ETC., TO RETAIN OLD AND TRAIN NEW OPERATORS?

¶ WHY NOT ELIMINATE ALL THIS UNNECESSARY EXPENSE?

¶ IF YOU WILL INVESTIGATE YOU WILL BE SURPRISED AT THE SAVING THAT CAN BE MADE IN YOUR OPERATING EXPENSES BY ADOPTING THE AUTOMATIC SYSTEM.

"DO IT NOW."

Automatic Electric Company

Chicago

Please tell the Advertiser you saw his Announcement in TELEPHONY.

PARANITE

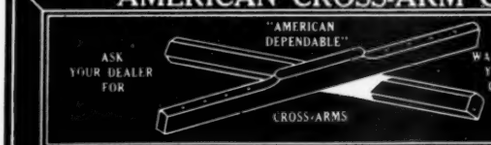
The Standard for Telephone use

Rubber Covered Wires and Cables

Braided, leaded and armored cables; plain and braided copper and iron wires of any number of conductors *Manufactured by*

Indiana Rubber and Insulated Wire Company
JONESBORO, INDIANA

AMERICAN CROSS-ARM CO.



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IF YOU SOLDER USE
Burnley Soldering Paste
All telephone men know it is reliable, easily used and obtains the best results. Free of any corrosive elements. Handled by your dealer. Want samples? Write.

BURNLEY

Burnley Battery & Mfg. Co.
Dept. T, North East, Pa.

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Ammeters and Voltmeters, Wattmeters, Synchroscopes, Power Factor Meters and Frequency Meters, constitute a line of Switchboard Alternating Current Indicating Instruments which is unequalled. Send for our Catalogs giving full description of these instruments. They are accurate—durable—dependable—and we stand back of them.

Demonstrations of the operative characteristics of these remarkable instruments may be observed in our New York Office and also in the offices of Selling Representatives in Philadelphia, Chicago, San Francisco and Toronto.

WESTON ELECTRICAL INSTRUMENT COMPANY, Main Office and Works, NEWARK, N. J.

New York, 114 Liberty St.
Chicago, 1504 Monadnock Block.
Boston, 176 Federal St.
Philadelphia, 342 Mint Arcade.
Birmingham, Brown Marx Bldg.
St. Louis, 915 Olive St.
Denver, 231 15th St.
San Francisco, 682 Mission St.
New Haven, 29 College St.
Cleveland, 1729 E. 12th St.
Detroit, 44 Buhl Block.
Toronto, 76 Bay St.
Montreal, Winnipeg, Vancouver, Calgary } Northern Electric & Mfg. Co.
Paris, 12 Rue St. Georges.
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Johannesburg, So. Africa, F. Peabody Rice, Standard Bank Buildings, Harrison St.

OKONITE

REG. U.S. PATENT OFFICE

INSULATED
WIRES & CABLES

The STANDARD *for* RUBBER INSULATION

THERE are enough imitations of OKONITE to warrant suspicion. Look for the single ridge in the insulation. It's your protection and distinguishes genuine OKONITE as such.

THE OKONITE COMPANY
253 Broadway. New York

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"The Ideal Duplex Drop Wire"

HAS REVOLUTIONIZED
the drop wire business

It has set the standard of excellence the world over. It is in a class by itself. No drop wire has ever met with such stupendous sales as Ironite.

The reason is plain

Ironite is the most efficient drop wire made. Its conductivity is ample, has great tensile strength, easily handled, highest grade insulation and is low in price.

Every User Boosts Ironite
It Will Pay You to Use It

If your jobber does not handle the genuine Ironite with our tag on it, send your order to us.

Samples and Prices on Request

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Agents for Ontario
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A Wire Which Costs Nothing Would Be Expensive

If you had to replace it every week. Yet, in a "sleet region" the cost of repairing broken copper lines, after a while, amounts to more than their original cost—and that's so without any allowance for loss of business and popularity.

The first cost of No. 14 Copper Clad is about half that of No. 12 copper wire, but the Copper Clad won't cost ten per cent as much as the copper to maintain.

The repair crew may get lazy if you use Copper Clad, but they'll be happy—and so will your subscribers.

Trade Mark
"Weld Clad"

Duplex Metals Company

Chester, Pennsylvania

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853 Peoples Gas Bldg.

NEW YORK OFFICE
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1913!!

Order *Now* your Rental and Toll Records, Cash Books, Voucher, Checks, Receipts, Etc., for 1913.

Now! Now! Now! Now! Now!

Telephone Printing Co.
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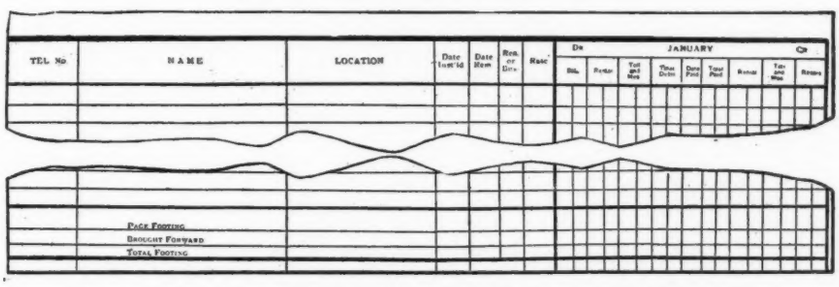
Rental and Toll Record—

60 Folio Pages
1440 Accts.—$4.00.

Approved by State Public Utility Commissions



This cut illustrates the ruling and printing for one month.—Accounts kept one year without rewriting names.

Neat Substantial Inexpensive

THE BROWNELL SYSTEM
of Interchangeable Unit Office Fixtures

Shipped knocked-down and assembled with a screwdriver.
All styles of telephone booths.

Send for Catalog

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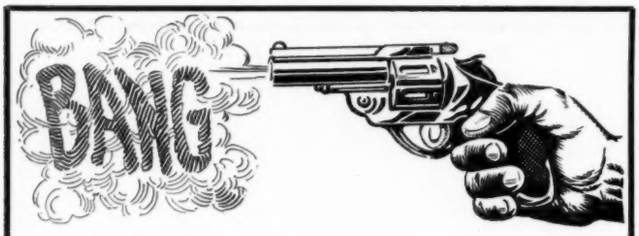

Frankly—This is to attract your attention.

WE are a central market. We strive to give efficient service to the central territory—not that we limit ourselves to those states—but we realize that you appreciate prompt, quick shipments—and careful attention to details. Your re-orders attest so—and that is our aim—to hold your continued, satisfied patronage.

Write for Catalog

Illinois Elec. Co.
238 Madison St.
CHICAGO

We Pay Your Repair Bills

Rather a startling statement, isn't it?

Let us tell you about it.

We have such positive knowledge that Chicago Telephones are trouble proof that we bind ourselves legally to pay all repair expense. We pay not only for materials required, but also for the time and expenses of your trouble man while he is going to and from the telephone, and while he is making the repair.

If the telephone is ten miles from your Exchange this expense item might be greater than the price of the telephone. We can afford to do this because the percentage of Chicago Telephones that ever need attention is negligible. During the year ending July 1, 1912, with six hundred thousand telephones in use, this trouble insurance cost us only $274.00.

No other telephone factory dares to duplicate this repair service because no other telephone is good enough to justify it.

Write for booklet entitled "Making Good."

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Makers of Telephones and Switchboards
Elkhart, Indiana, U.S.A.

Patent Pending

"Hy-Po-Stat"

The All Metal and Porcelain Cable Protection
This is the terminal that

"Protects Your Cables"

and makes your investment a permanent one.
For further information ask your jobber, or write

The Royal Electric Company
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Telephone and Switchboard Repairing

You can have your **plugs, jacks, keys, drops,** etc., **repaired** and made like new, at a **saving in cost** to you over new apparatus.

With our up-to-date tools and machinery, including all of the equipment of the old Sterling Electric Company, we are qualified to do all kinds of **telephone** and **switchboard repair work** and to furnish the **highest grade** of **repair parts** and **apparatus** at reasonable prices.

We solicit your inquiries for repair parts, special apparatus, etc.

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Lafayette, Indiana, U. S. A.

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Roebling Telephone Wire

can be obtained from stock in Roebling warehouses at Trenton, N. J., New York, Philadelphia, Pittsburg, Savannah, (Office Atlanta) Cleveland, Chicago, San Francisco, Los Angeles, Seattle and Portland, Oregon.

This applies to Double Galvanized, Hard Drawn Copper, and Copper Clad Steel Wire, also Galvanized Strand

Made by

JOHN A. ROEBLING'S SONS CO.

TRENTON, N. J.

TELEPHONE WIRE

We Guarantee
Greatest Efficiency
Longest Life
Most Satisfactory Service
Lowest Cost of Up-keep
In the Use of our wire.

Write for FREE SAMPLE Make Test and Comparison

Approved by Leading Institutions of Technology and Telephonic Science. Handled by most representative Jobbers and Supply Houses.

Indiana Steel & Wire Co.
Muncie, Indiana.

W&M TELEPHONE WIRE

OUR W. & M. Telephone Wire is drawn from metal made especially for the purpose and rigidly inspected. The spelter is carefully laid on with uniform thickness, ensuring ample protection for the wire under extreme weather conditions.

In point of conductivity this good wire has attained the highest possibilities and we submit our three brands—"E. B. B." "B. B." and "Steel"—as the best that can be produced.

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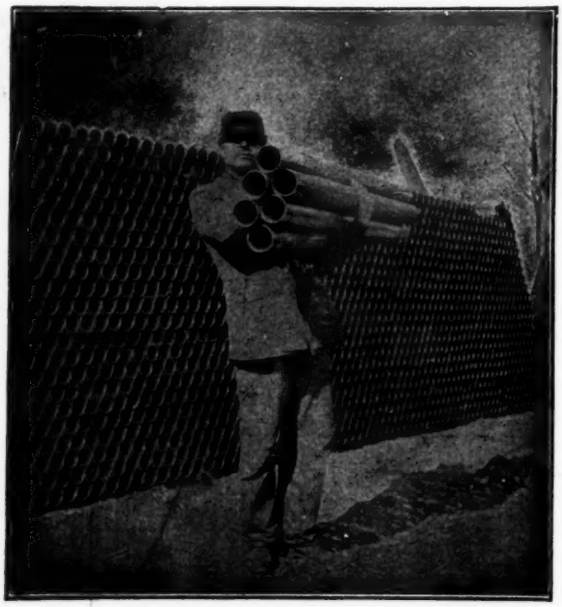
NEW YORK United States Steel Products Co., 30 Church St. Export Representatives



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Made in FOUR STYLES OF JOINTS

Socket, Sleeve, Screw and Harrington

WITH BENDS AND FITTINGS FOR SAME

Is the lightest conduit made

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San Francisco, Cal.
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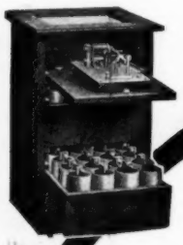

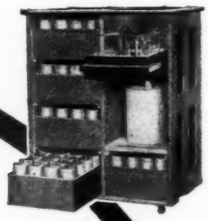

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Pole Changers

will make ringing service less expensive and less troublesome to you and much more satisfactory to your subscribers.

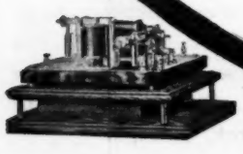
Ringing service requirements in one exchange are different from those of another. We manufacture pole changers of various designs and are able to meet your requirements exactly.

16,000 Now Being Used by Companies the World Over Who Are Satisfied with Results

We have engineers who have made a study of the ringing problem and their knowledge is yours for the asking. Write us stating your conditions and we can make recommendations that will save you money as well as improve your ringing service.

Warner Electric Co.

Muncie, Ind.



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Prompt Service

You can always rely on our prompt service. You get performance instead of promises when you send your order to us. Write us for quotations on **Northern White Cedar and Western Red Cedar poles.**

Page & Hill Co., Lumber Exchange Minneapolis

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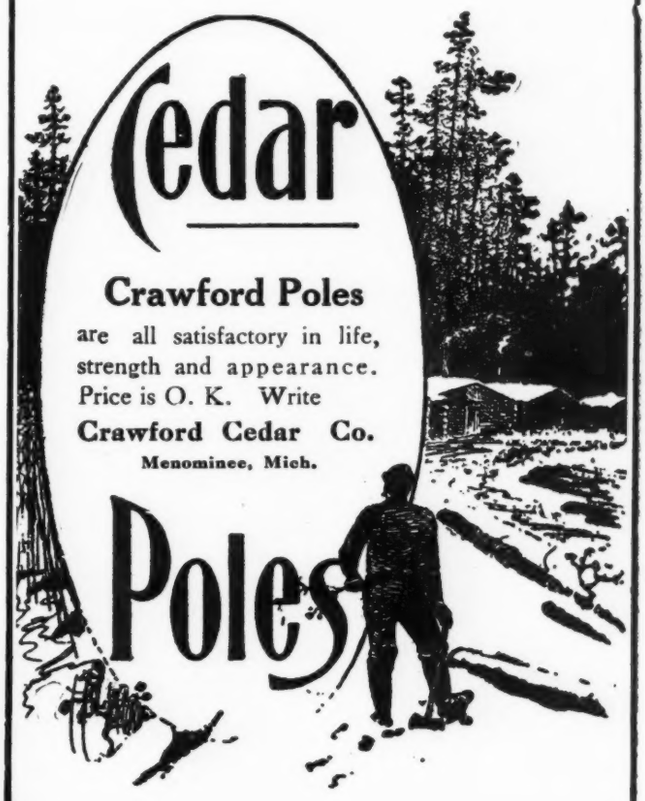
The Trinity in Poles
"Service—
Price—
Quality."

POLES

Cedar



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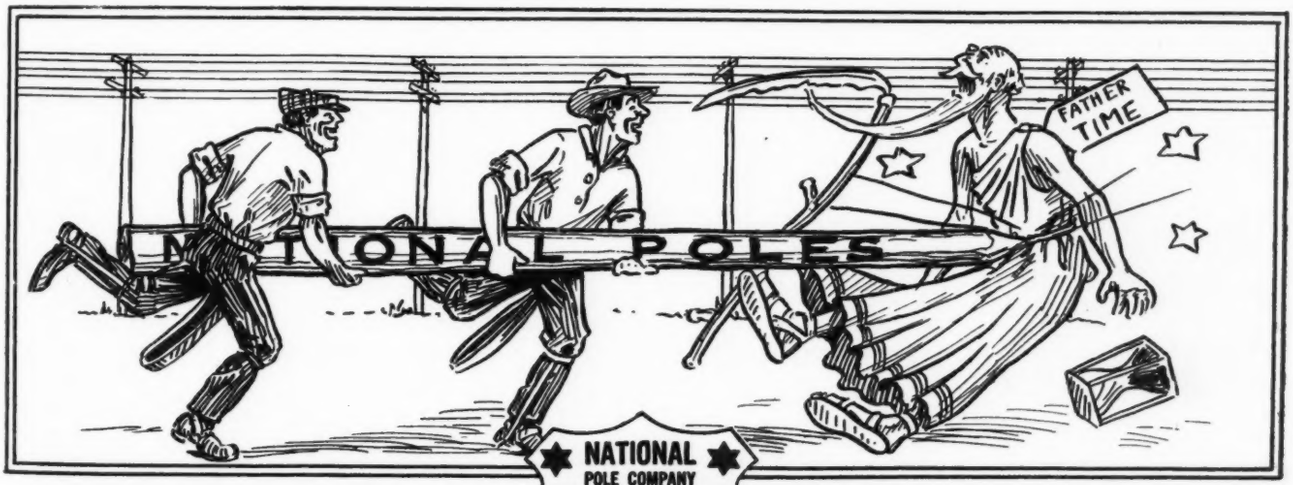
are all satisfactory in life, strength and appearance. Price is O. K. Write
Crawford Cedar Co.
Menominee, Mich.

Poles



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Very Few Systems Employ Flimsy Construction any more. The Better the Company, the Better its Methods. We are Able to Fill the Most Exacting Requirements of the Very Best Companies.

Over fifteen years of experience in WHITE and WESTERN CEDAR POLES
Exceptional Facilities. Yards at the Most Favorable Shipping Points.

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Idaho Red Cedar **Poles**

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Large Stocks—Prompt Shipments
Good Quality—Right Prices

Idaho Cedar Poles
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CEDAR POLES

We have a fine lot of poles.
Our poles are strong and tough—the kind you need for long service.
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Helps the business.
Strengthens the cause.
Safeguards the watch.
Ornaments the person.

A Becoming Christmas Gift

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Design handsomely wrought in rich enamel colors: Red, White, Blue and Gold; neat black leather strap guard, with gold plated buckle.

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Sent postpaid to any address for $1.00, carefully boxed and tissue wrapped.

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The Orr Pole Reinforcing Process

Restores the life of poles which are decayed at the ground line. The Orr Reinforcement can be inexpensively applied without interrupting service. Send today for our valuable book on Pole Reinforcing.

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Have the greatest holding power. More "Eversticks" used than all other patented anchors. *There's a reason.* Write for literature.

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One solid piece. Will not creep.
When the best is also the cheapest.
Where is the argument?
Let's get acquainted.

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Requires no Wiping

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Bonding Clamps
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Good Luck
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Of every description for telephone construction. Besides we make screws, nuts and pole line hardware. Hot or cold galvanizing. Prompt shipments. Write mentioning *TELEPHONY.*

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Vulcanized Fibre Special Shapes

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Vulcanized Fibre in Sheets, Rods and Tubes
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We handle just the poles for your purposes—the kind that you can depend upon to give service.

We are producers of poles—not jobbers. Consequently reasonable prices.

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CEDAR POLES
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Do You Realize the Importance of Buying from a Producer?
Our POLES Have Our Concentrated Attention from Stump to Car.

ONE PROFIT—ONE QUALITY—ONE PRICE

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They last longer in any soil—Stand twice the breaking strain of others.

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LARGE STOCKS
LOW PRICES
QUICK SHIPMENTS

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Established 1862. - - - - CHICAGO

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Oldest Cedar Pole Firm in Business — Producers for 32 Years

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W. C. STERLING & SON COMPANY

1880 MONROE, MICHIGAN 1912

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WRITE US—WE MAKE LOW PRICES—SHIP GOOD STOCK

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Main Office: "Electric" Bldg., Denver, Colo.

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C. C. C. stands for, among copper clad wire products, what E. B. B. does among iron wires, namely, *the very highest grade.*

Colonial Copper Clad Wire

TRADE C. C. C. MARK

is manufactured exclusively by this company under U. S. Patent No. 580344 dated April 6th, 1897, which antedates any other method now used of manufacturing copper clad wire in the United States.

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We manufacture Electric Wires and Cables of all kinds, all sizes, for all services; also Cable Terminals and Junction Boxes.

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CONDUIT SYSTEMS
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WORK STARTED
AT ANY POINT
WITHIN 48 HOURS

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Fifteen Years' Experience in Practical Telephone Work. Much of this Designing and Manufacturing Apparatus.
Fully equipped shop in which ideas are developed. Models made.
Inventions Perfected for Quantity Production.
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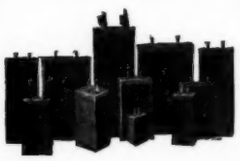

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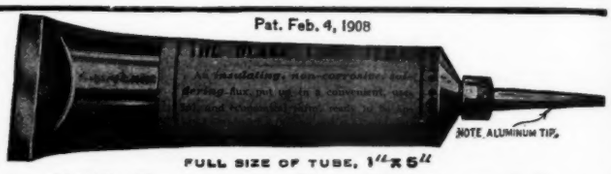
TYPE, TELEPHONE
CONDENSERS
embody all the essentials of long life and good service. *Write for Literature*

ELECTRIC SPECIALTY CO.
Cresco, Iowa

Insulated Staples
5 Sizes
Pat. Nov., 1900

BLAKE Specialties

STAPLES best for wiring.
TUBE FLUX best Flux for soldering.



FULL SIZE OF TUBE, 1"x5"

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Before The Calculagraph Was Known

telephone talking-circuits were held up after each message while the operators on the two ends of the line discussed the length of message as each had observed it, and endeavored to adjust the difference in their estimates—there usually were differences—and agree upon a basis for the charge.

Where the Calculagraph is used such practice has been abandoned, messages are accurately timed at one end of the line only and toll circuits are free for more paid business.

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GET HEMINGRAY GLASS INSULATORS

For Best Transmission

The teats on the petticoat, an exclusive feature of Hemingray Insulators, prevent water running to pins and causing grounds.

Hemingray Insulators are all insulation and are unusually free from breakage.

Write for Prices

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Factories: Muncie, Ind.

MILLIONS Of Dry Cells Are Handled In This Territory

FRENCH Telephone Cells

Are Manufactured and Shipped

Direct from Madison, Wis.

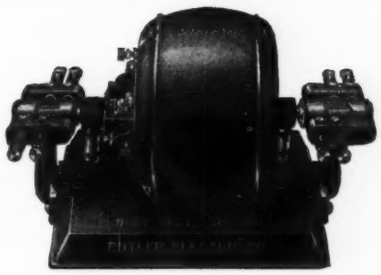
There is no reason why the dry cells *you* use should get old in transportation and stock rooms before you install them.

Your orders will be shipped the day received.

Send for new price schedule.

FRENCH BATTERY & CARBON CO.
Madison, Wis.

Butler Ringing Machines



Fully guaranteed—sold subject to test—you to be the judge.

That's fair, isn't it?

Be guided by facts, not theories—by actual performance, not claims.

Write for Booklet and Special Outfit Estimates

Butler Electric Company

PERRY, IOWA, U.S.A.

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RATES: 5 cents a word, with minimum charge of $1.00. Cash should accompany all transient advertising.

¶"REBUILT" TELEPHONE APPARATUS and exchange equipment saves you 30 to 50 per cent without sacrificing quality or efficiency.
¶SWITCHBOARDS—Telephones—Apparatus—Protection Equipment—Cable—Everything you need for the installation and operation of a complete exchange—Magneto or Central Energy—of the best and most reputable manufacturers.
¶Four years' successful operation of our rebuilt equipment department puts it past the experimental stage. Quality and price will make you a permanent customer. Better investigate.
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4032-4042 W. Ravenswood Park, Chicago, Ill.

"Rebuilt" when connected with Premier means something

Positions Wanted

WANTED—Position as lineman or manager. Seven years' experience in the telephone business. Can furnish references. I understand switchboard work. Address Box 242, Lucas, Kans.

WANTED—Young man 27 years of age, married, with 11 years' experience with magneto equipment, desires permanent position as manager or troubleman with telephone company. Address 1400, care TELEPHONY.

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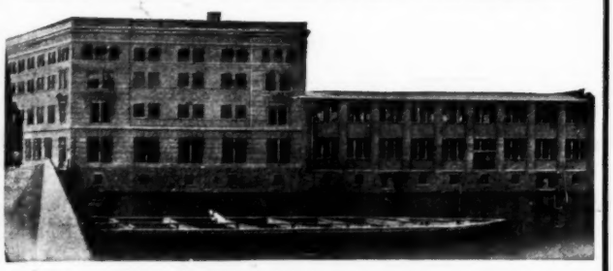

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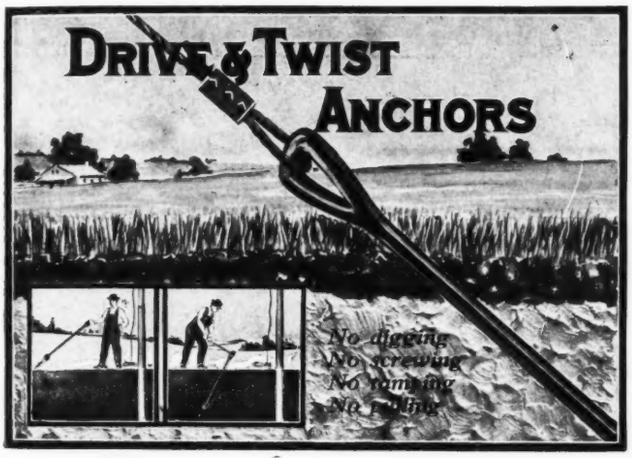

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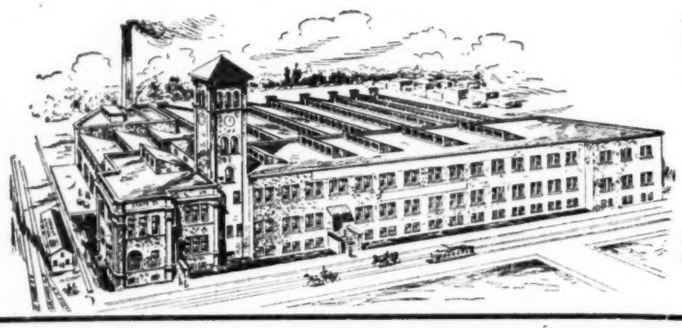

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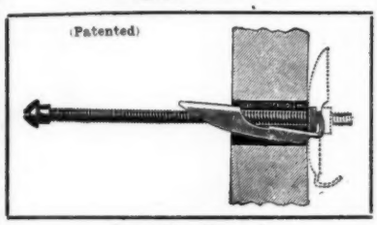

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